LEDucation Trade Show and Conference

Designers Lighting Forum

View Quality: Why and How to Measure?

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Learning Objectives

At the end of this course, participants will be able to:

1. Understand the significance of view quality and the factors

2. Learn various image quality metrics related to indoor and window views

3. Identify the primary image quality metrics that can predict view quality

4. Discuss the integration of image quality metrics into the building and lighting design

Agenda

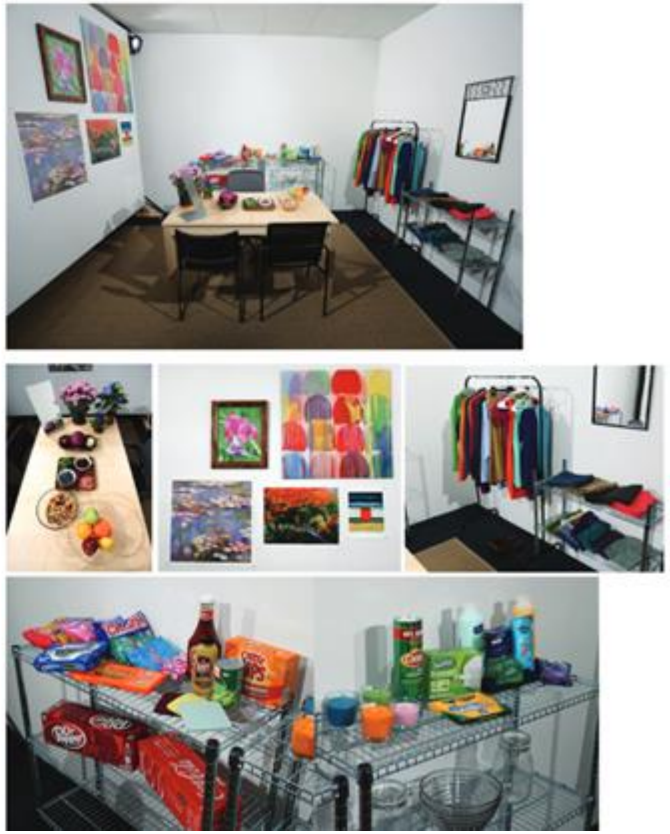
1. What is view quality?
2. Why does view quality matter?
3. How is view quality measured?
4. Can we improve it?
   - Indoor view quality
   - Window view quality
5. What is next?

https://www.pexels.com/photo/wooden-table-near-windows-13129824/

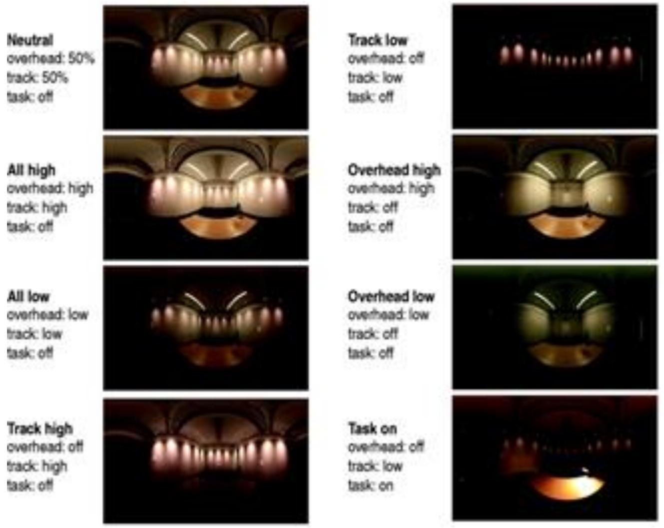
Lighting and occupants

Indoor (view) quality and lighting

Scott, S. C. (1993). Visual attributes related to preference in interior environments. *Journal of interior design*, 18(1-2), 7-16.



Royer, M. P., Wilkerson, A., Wei, M., Houser, K., & Davis, R. (2017). Human perceptions of colour rendition vary with average fidelity, average gamut, and gamut shape. *Lighting Research & Technology*, *49*(8), 966-991.



Rockcastle, S., Danell, M., Calabrese, E., Sollom-Brotherton, G., Mahic, A., Van Den Wymelenberg, K., & Davis, R. J. L. R. (2021). Comparing perceptions of a dimmable LED lighting system between a real space and a virtual reality display. *Lighting Research & Technology*, *53*(8), 701-725.

Indoor (view) quality and lighting

We know (with caveats) that...

1. People prefer natural light and spacious settings with plants.

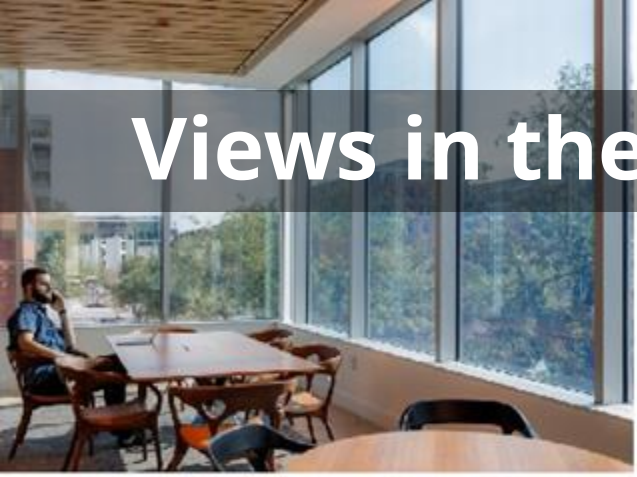
1. Complexity is preferred to a certain extent.

1. Light levels matter in dim conditions, but not so much at photopic levels.

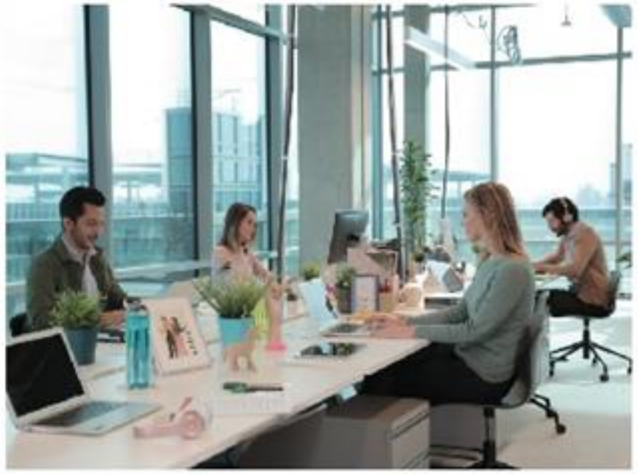
1. Colorfulness is preferred to a certain extent.

1. CCT is not a good preference measure, unlike color (especially red) saturation.

Views in the built environment









Multiple benefits of views

Real estate and views

What is the impact of having a window view?

Background

- Vision and multi sensory system
- Visual perception may affect thermal perception

Source: Multisensory Cognition Lab.

Source: Harry Cock, Designtrend.

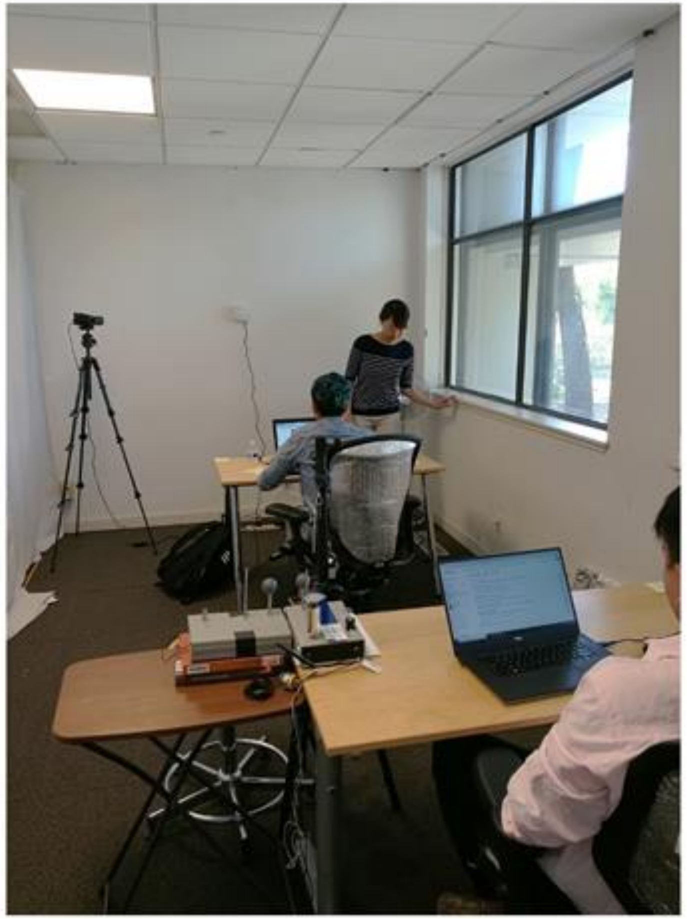
Source: Tori Powers, SJExpress.

Ko, WH, et al. "The impact of a view from a window on thermal comfort, emotion, and cognitive performance", Building and Environment. 175 (2020) 106779. https://doi.org/10.1016/j.buildenv.2020.106779.

Methods

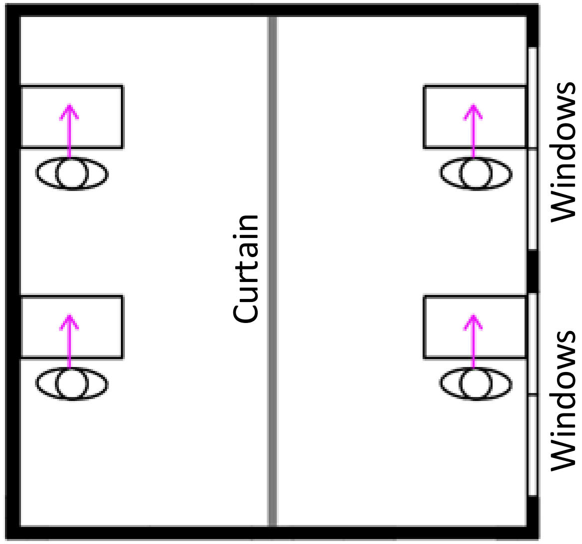
Thermally identical spaces with and without windows (28° C, slightly warm condition)

Without windows.



With windows.

View through the windows.



Floor plan of the CBE chamber.

Ko, WH, et al. "The impact of a view from a window on thermal comfort, emotion, and cognitive performance", Building and Environment. 175 (2020) 106779. https://doi.org/10.1016/j.buildenv.2020.106779.

Results

Felt cooler

At slightly warm ambient condition,
- Approximately 1 °C lower thermal sensation
- 12 % more thermal comfort
- 8% in cooling energy and 6.5% of total HVAC energy reduction for a building in San Francisco, USA

Felt happier

- Increase in positive emotions
- Decrease in negative emotions

More focused

- 6% better working memory
- 5% better concentration

Ko, WH, et al. "The impact of a view from a window on thermal comfort, emotion, and cognitive performance", Building and Environment. 175 (2020) 106779. https://doi.org/10.1016/j.buildenv.2020.106779.

What determines the quality of a window view?

Where would you prefer to sit?

vs.

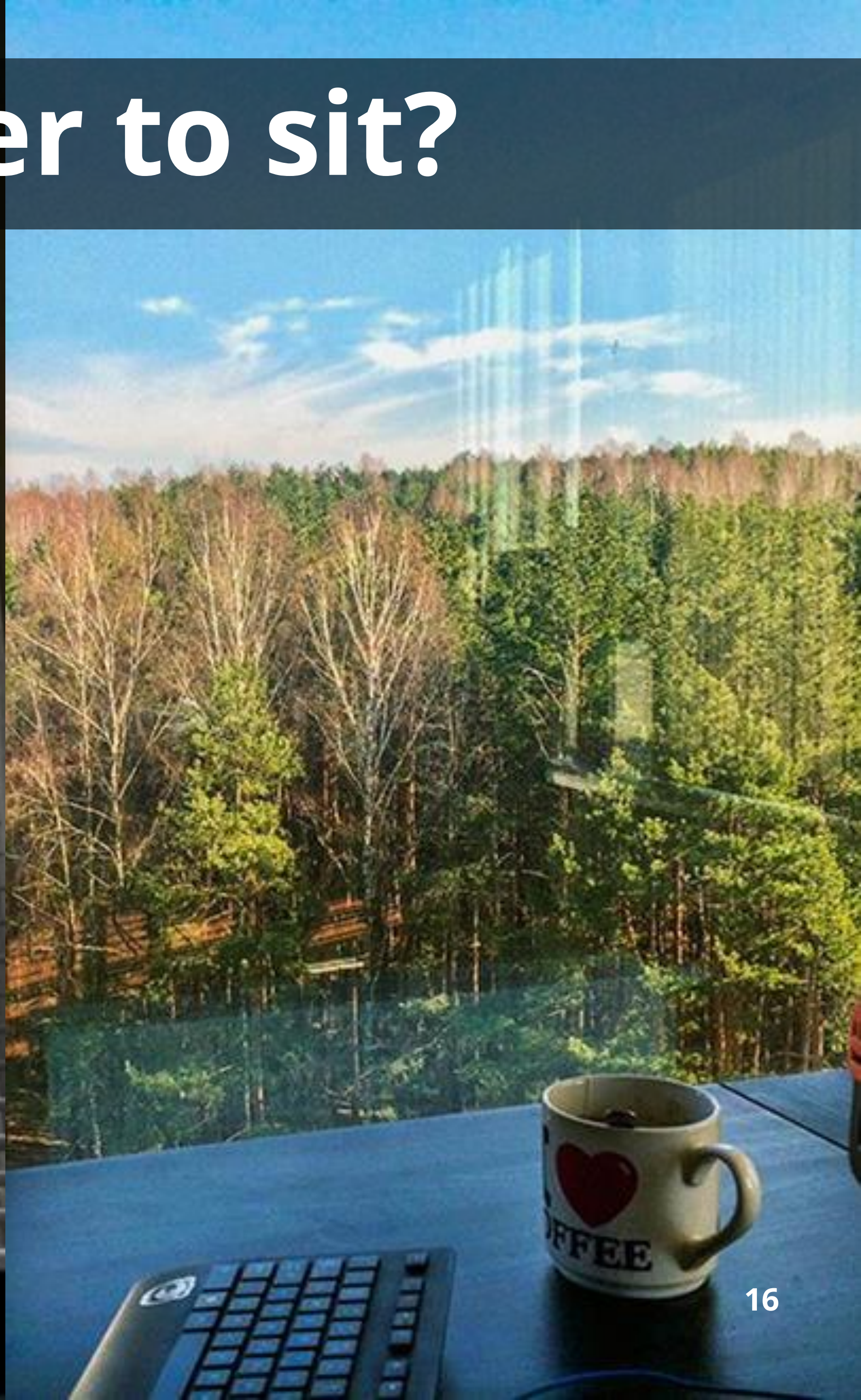


Image: https://www.mirror.co.uk, https://www.boredpanda.com

Method

Literature Review

Building Standards
- CIBSE
- EN
- ASHRAE
- IES…

Green certification systems
- LEED
- WELL
- BREEAM
- Green Globes
- Green Star…

Scientific research papers
- Architecture
- Urban planning
- Landscape
- Environmental psychology
- Vision science

View Quality Framework

Three variables

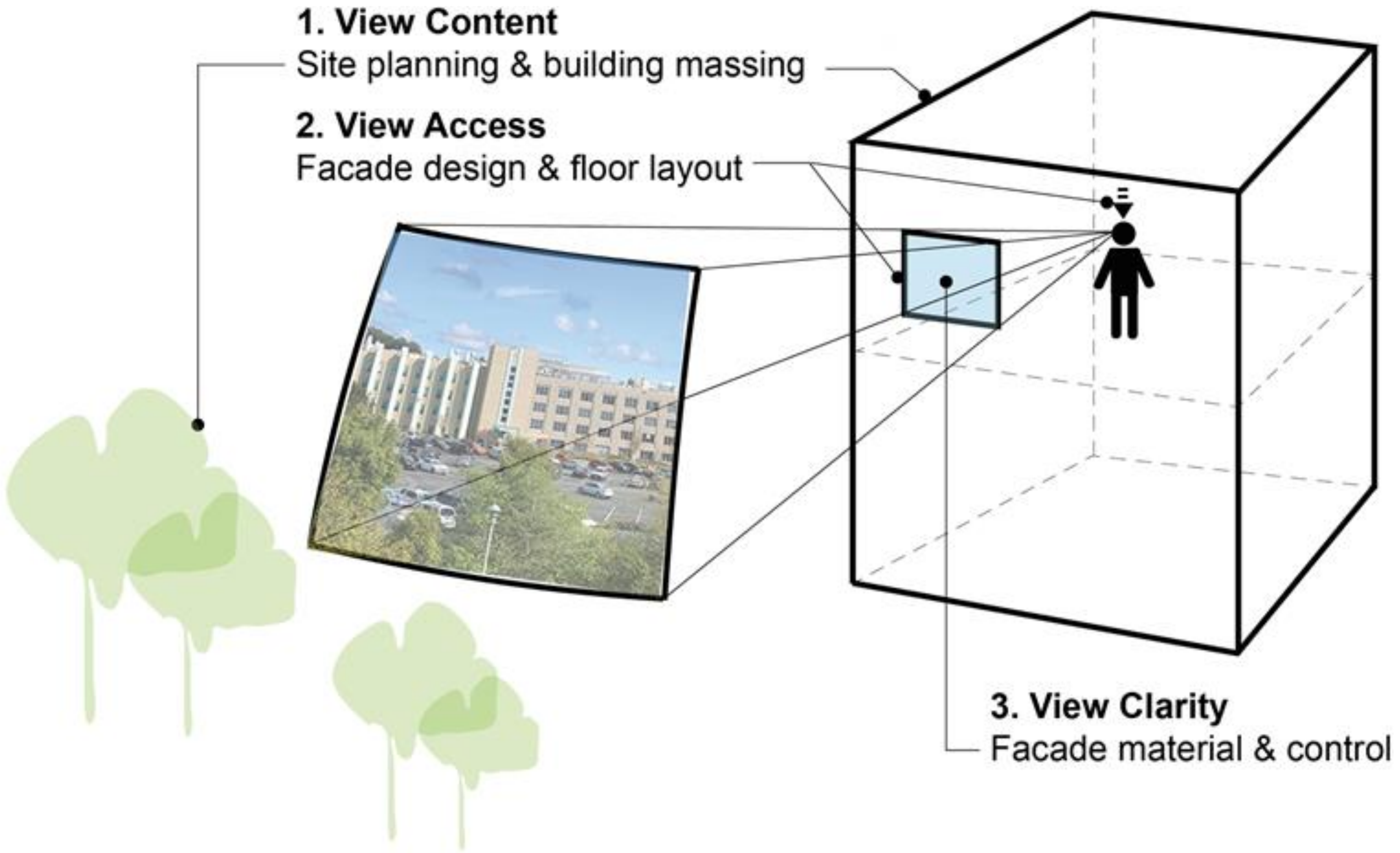
Content | Access | Clarity

View Quality Index (VQI)

Center for the Built Environment
Industry advisory workshop

Ko, W.H., Kent, M.G., Schiavon, S., Levitt, B., Betti, G., 2021. A window view quality assessment framework. LEUKOS - Journal of Illuminating Engineering Society of North America 40. https://doi.org/10.1080/15502724.2021.1965889

Window view assessment: Primary variables



Ko, W.H., Kent, M.G., Schiavon, S., Levitt, B., Betti, G., 2021. A window view quality assessment framework. LEUKOS - Journal of Illuminating Engineering Society of North America 40. https://doi.org/10.1080/15502724.2021.1965889

1. View Content

High

Low

Definition

- The sum of the visual features seen in a window view

Criteria

- Natural and urban features
- Horizontal stratification
- Content distance
- Dynamic features (movement)

Ko, W.H., Kent, M.G., Schiavon, S., Levitt, B., Betti, G., 2021. A window view quality assessment framework. LEUKOS - Journal of Illuminating Engineering Society of North America 40. https://doi.org/10.1080/15502724.2021.1965889

1. View Content

Natural and urban features

Horizontal stratification

Ground layer | Landscape layer | Sky layer

Content distance

Distant view

Nearby view

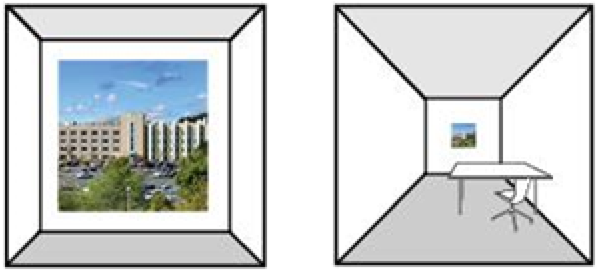
Dynamic features (movements)

People and water feature(s)

Traffic flow

Ko, W.H., Kent, M.G., Schiavon, S., Levitt, B., Betti, G., 2021. A window view quality assessment framework. LEUKOS - Journal of Illuminating Engineering Society of North America 40. https://doi.org/10.1080/15502724.2021.1965889

2. View Access



High Low

Definition

- A metric quantifying how much of the window view(s) an occupant can see through from a particular location within a space

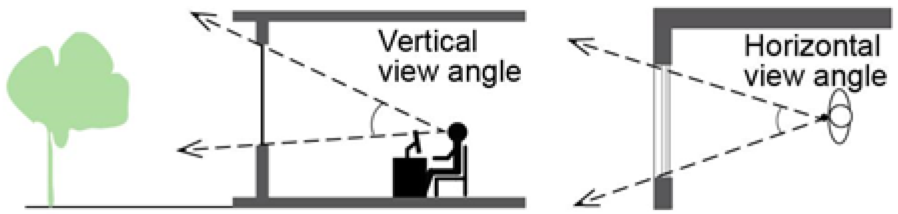
Criteria

- View angle of a window
- Distance from a window and window-to-wall ratio (WWR)
- Spatial assessment of view access

Ko, W.H., Kent, M.G., Schiavon, S., Levitt, B., Betti, G., 2021. A window view quality assessment framework. LEUKOS - Journal of Illuminating Engineering Society of North America 40. https://doi.org/10.1080/15502724.2021.1965889

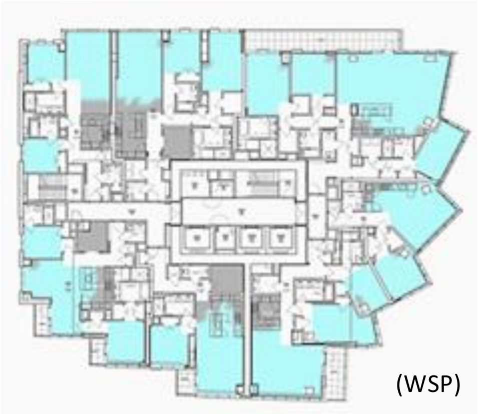
2. View Access

View angle of a window



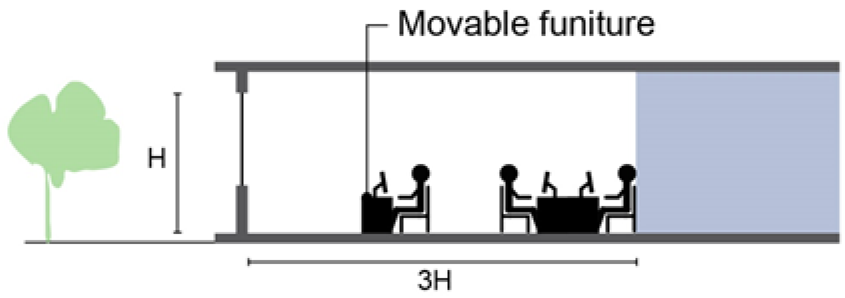
Horizontal and vertical view angles, View Factor

Spatial assessment of view access

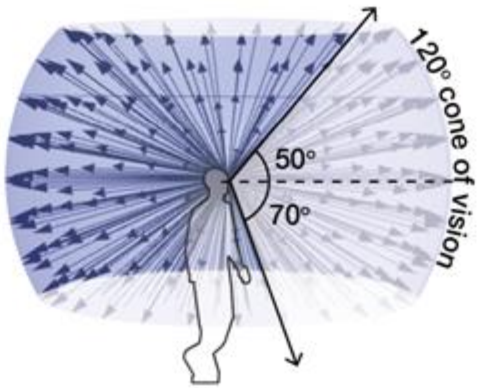


The percentage of floor space that can provide visual contact with the window(s)

Distance from a window and WWR



Simulations



Rays cast from one viewpoint in a 120 degree cone of vision (Turan et al. 2021)

Ko, W.H., Kent, M.G., Schiavon, S., Levitt, B., Betti, G., 2021. A window view quality assessment framework. LEUKOS - Journal of Illuminating Engineering Society of North America 40. https://doi.org/10.1080/15502724.2021.1965889

3. View Clarity

High

Low

Definition

- A metric assessing how clearly the visual content in the view can be seen by the occupant

Criteria

- Window design
- Glazing and shading materials
- Temporal attributes of view clarity

Ko, W.H., Kent, M.G., Schiavon, S., Levitt, B., Betti, G., 2021. A window view quality assessment framework. LEUKOS - Journal of Illuminating Engineering Society of North America 40. https://doi.org/10.1080/15502724.2021.1965889

3. View Clarity

Window design

Window view — Horizontal mullion — Vertical mullion

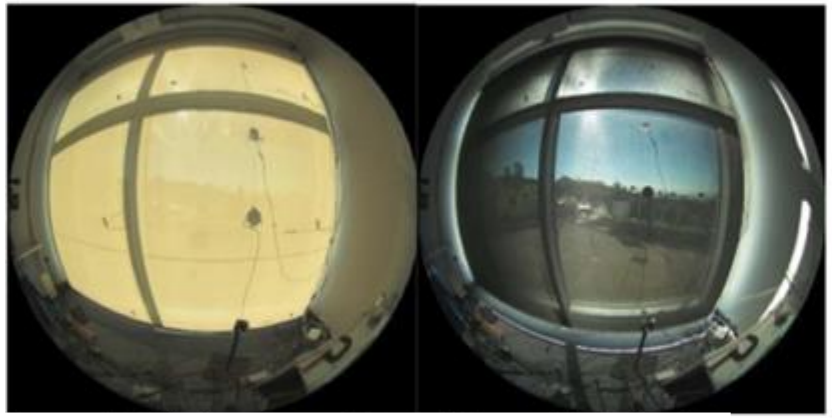
Temporal attributes of view clarity

- Minimum acceptable levels
- The consideration of climate-based daylighting metrics

Glazing and shading materials

A building in Vancouver

Image: https://thriveglobal.com/



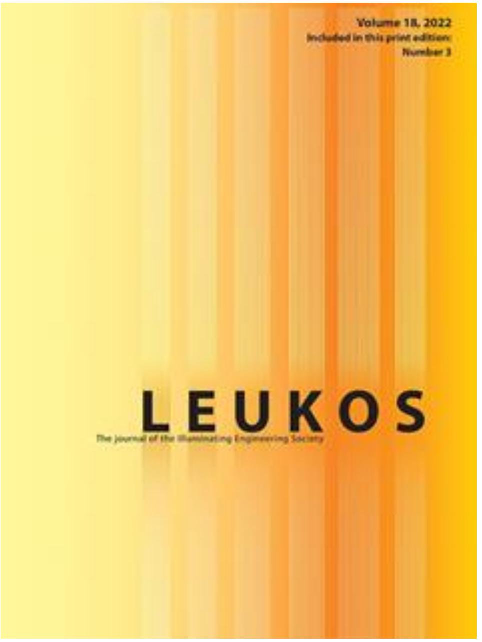
Window view with different fabric shades, LBNL Window Testbeds

Ko, W.H., Kent, M.G., Schiavon, S., Levitt, B., Betti, G., 2021. A window view quality assessment framework. LEUKOS - Journal of Illuminating Engineering Society of North America 40. https://doi.org/10.1080/15502724.2021.1965889

Symposium and position statement

Virtual Symposium: View Research and Design Practice

1. **Critical Aspects of View Research**
   - View from the Classroom Window
   - Influence of Window View Landscape Distance Effects on Visual Satisfaction
   - View Clarity Towards Visual Satisfaction
2. **Development of a View Index**
   - A Window View Assessment Framework
   - Visualizing and Evaluating Views in Architectural Design Using Google Earth Studio
   - Simulation-Based View Analysis
3. **Integration of Research and Practice**
   - Fragmented Views: Solid Angle and the Search for Quantifiable View Metrics
   - Integrating View Analysis in Practice: A Perspective from KieranTimberlake Research
   - Views as a Driver for Real Estate Outcomes



Window View Quality: Why It Matters and What We Should Do

Won Hee Ko, Stefano Schiavon, Sergio Altomonte, Marilyne Andersen, Ayesha Batool, William Browning, Galen Burrell, Kynthia Chamilothori, Ying-Chieh Chan, Giorgia Chinazzo, Jens Christoffersen, Nancy Clanton, Christopher Connock, Timur Dogan, Billie Faircloth, Luis Fernandes, Lisa Heschong, Kevin W. Houser, Mehlika Inanici, Alstan Jakubiec, Anjali Joseph, Caroline Karmann, Michael Kent, Kyle Konis, Iason Konstantzos, Kera Lagios, Linda Lam, Florence Lam, Eleanor Lee, Brendon Levitt, Wenting Li, Piers MacNaughton, Ahoo Malekafzali Ardakan, John Mardaljevic, Barbara Matusiak, Werner Osterhaus, Steffen Petersen, Matt Piccone, Clotilde Pierson, Brent Protzman, Tarek Rakha, Christoph Reinhart, Siobhan Rockcastle, Holly Samuelson, Luis Santos, Azadeh Sawyer, Stephen Selkowitz, Eloise Sok, Jakob Strømann-Andersen, William C. Sullivan, Irmak Turan, Gayathri Unnikrishnan, Will Vicent, Dan Weissman & Jan Wienold

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Download citation
https://doi.org/10.1080/15502724.2022.2055428

- Define window view quality
- Reach a consensus on the primary components of window view quality
- Identify research gaps in current view assessment methods
- Develop a position statement - 54 researchers and practitioners "signed on"

Ko, W.H., Kent, M.G., Schiavon, S., Levitt, B., Betti, G., 2021. A window view quality assessment framework. LEUKOS - Journal of Illuminating Engineering Society of North America 40. https://doi.org/10.1080/15502724.2021.1965889

Where are we now?

Problem statement

Current view quality assessment methods

Primarily classification and prescriptive methods (LEED v4.1, WELL v2, EN17037, etc.)

- Presence of green and blue spaces (e.g., trees and rivers)
- Number of horizontal layers (sky, landscape, and ground)
- Content distance (close, medium, far)
- Movements (moving objects)

Nature vs. Man-made objects

Horizontal layers

Ground layer Landscape layer Sky layer

Problem statement

When the view is complex, it is difficult to determine its quality using existing methods.

Can other disciplines help us evaluate images systematically?

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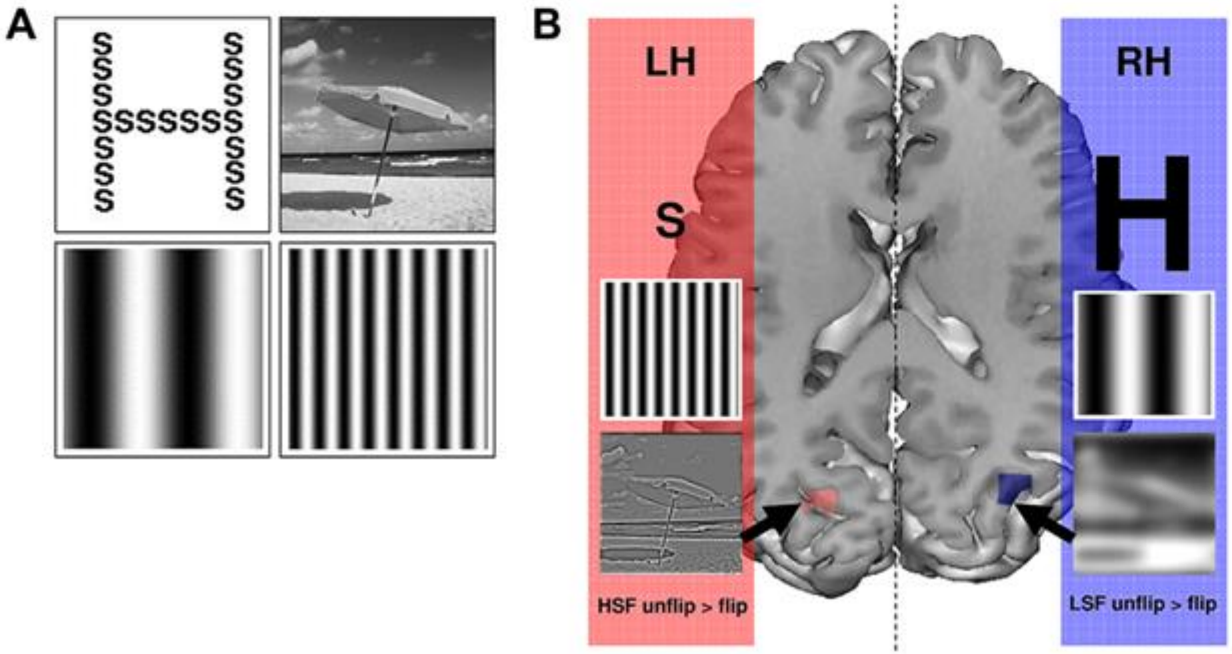
Inspiration from vision science

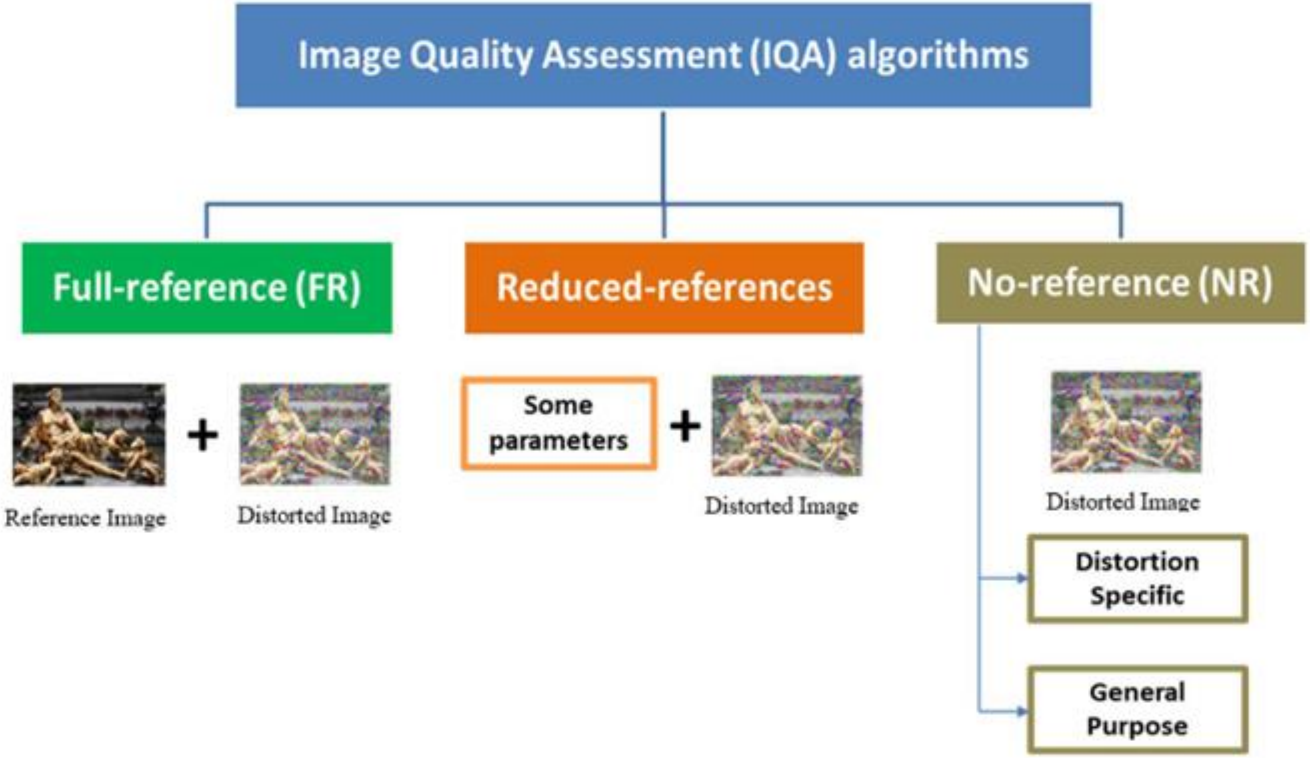
Spatial frequency: sinusoidal components (as determined by the Fourier transform) of an image repeated per unit distance.



Kauffmann, L., Ramanoël, S., & Peyrin, C. (2014). The neural bases of spatial frequency processing during scene perception. *Frontiers in integrative neuroscience*, *8*, 37.

A potential solution

Image quality assessment (IQA), a sub branch of computer science, offers computational (objective) tools.

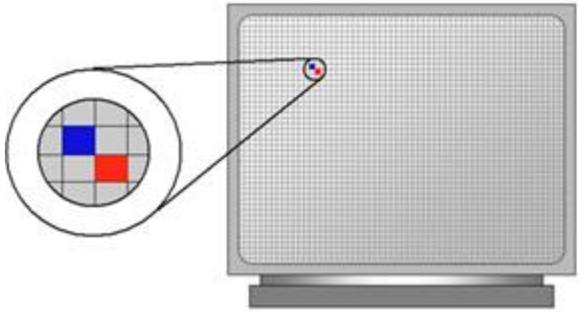


Ravela, R. S. (2019). No Reference Image Quality Assessment. Thesis. University of Texas at Tyler.

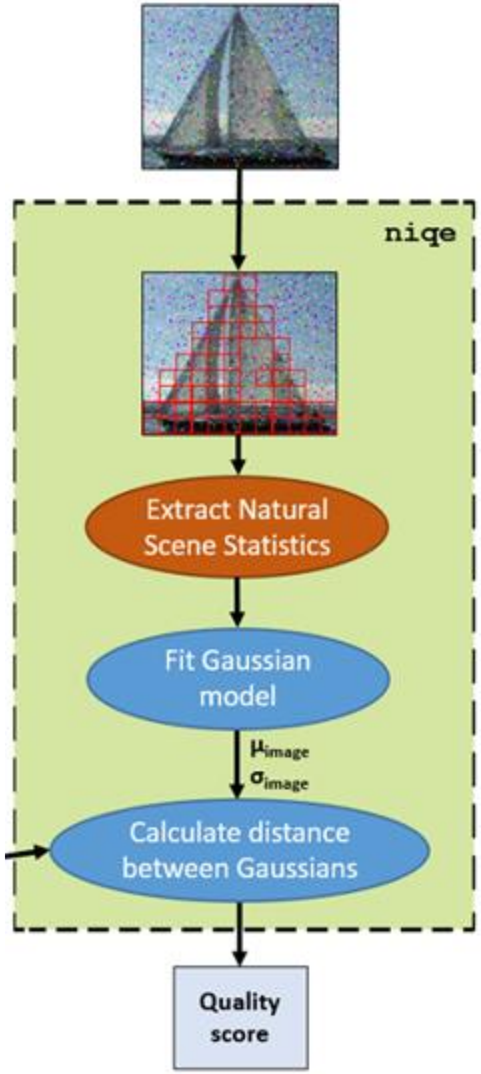
Image quality metrics (IQMs)

General image quality metrics

- Energy: The rate of change in the color, brightness, or magnitude of the pixels over local areas.
- Euler: Total number of objects minus holes in those objects.
- Contour: Detect the structural outlines of objects in an image, which may then be used to determine the form of an object.
- Naturalness image quality evaluator (NIQE): Evaluate the overall quality of images by computing statistics of its gradient.
- Brightness: The average value of all pixel intensities in the image.



https://stackoverflow.com/questions/600374/what-is-a-pixel-px-in-css

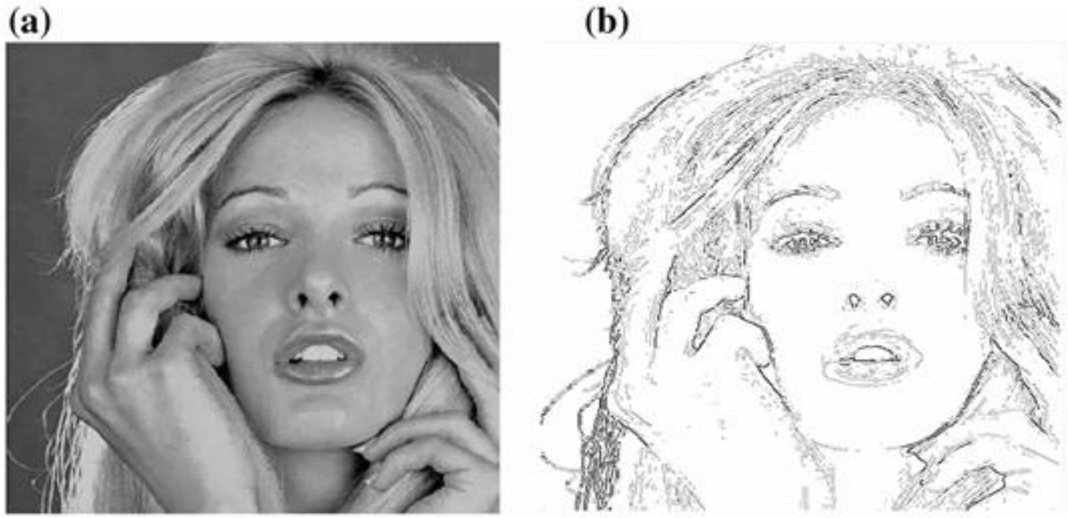


https://www.mathworks.com/help/images/workflow_niqe.png

Image quality assessment (IQA)

Contrast metrics

- Edge-based contrast measure (EBCM): Assessing the quality of an image by comparing its edge contrast.
- Root mean square (RMS): The standard deviation of brightness levels in the stimulus.



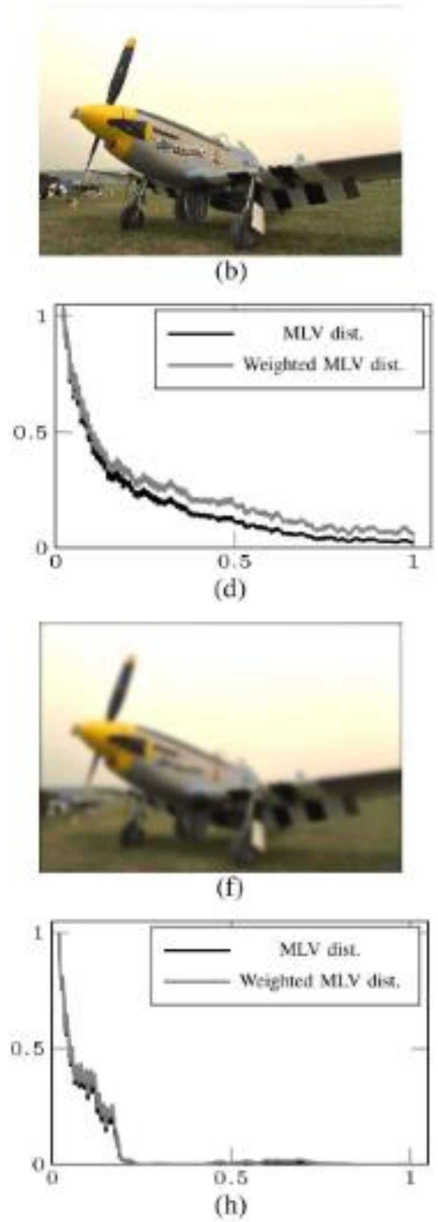
Extraction of strong and weak edges from a sample image: a original image, b extracted edges

Choukali, M. A., Valizadeh, M., & Chehel Amirani, M. (2020). An efficient contrast enhancement method using repulsive force of edges. *Multidimensional Systems and Signal Processing*, *31*, 299-315.

Image quality assessment (IQA)

Clarity metrics

- Maximum local variation (MLV): The overall clarity of an image in terms of focus and contrast.
- Blind/referenceless image spatial quality evaluator (BRISQUE): Possible losses of "naturalness" in the image using normalized luminance values.



Bahrami, K., & Kot, A. C. (2014). A fast approach for no-reference image sharpness assessment based on maximum local variation. *IEEE signal processing letters*, *21*(6), 751-755.

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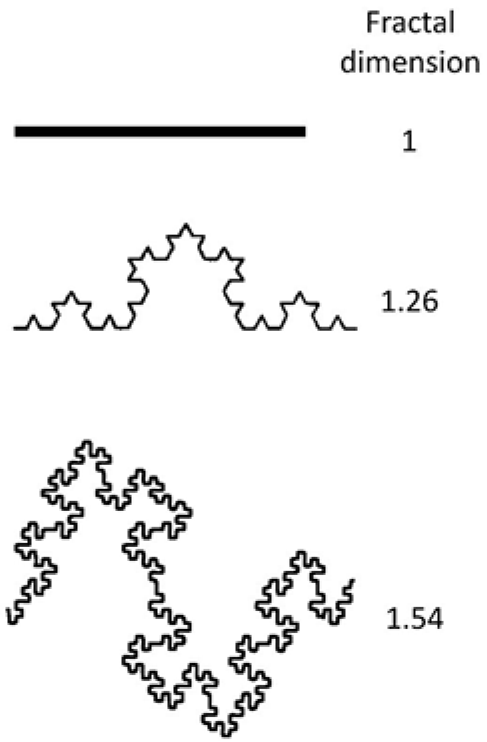
Image quality assessment (IQA)

Complexity metrics

- Detectability suprathreshold (R_{spt}): The number of detectable regions in an image over a threshold
- Entropy: The average uncertainty of the information source.
- Spatial Information (ITU SI): The spatial detail in an image.
- Fractal Dimension: A statistical index of complexity detail in a self-similar pattern.

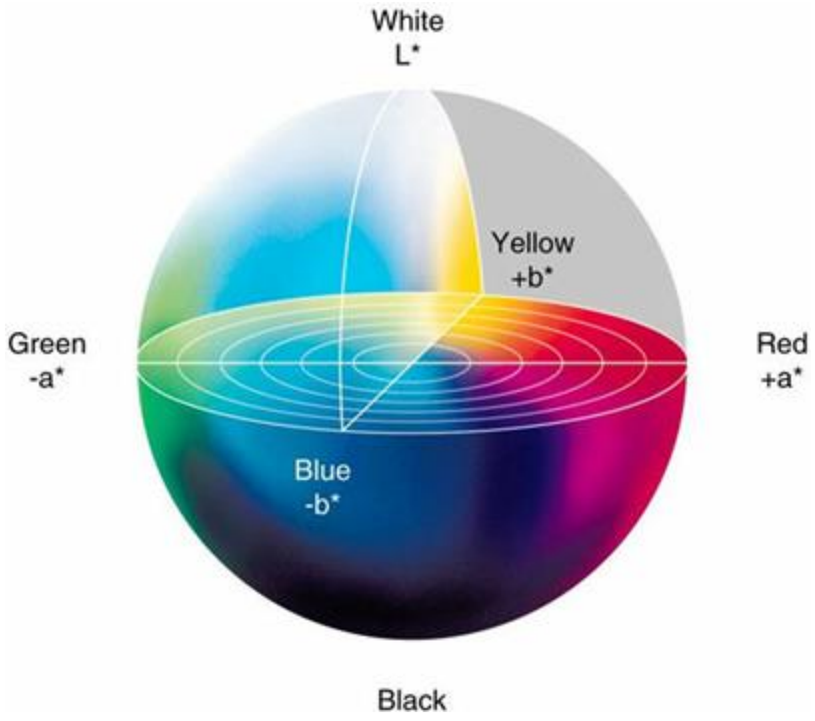


Tanabe, N., Sato, S., Suki, B., & Hirai, T. (2020). Fractal analysis of lung structure in chronic obstructive pulmonary disease. *Frontiers in physiology*, *11*, 603197.

Image quality assessment (IQA)

Color metrics

- Chroma (C^*): CIE 1976 $L^*a^*b^*$ chroma
- Colorfulness (M): Overall colorfulness of images



Cortez, R., Luna-Vital, D. A., Margulis, D., & Gonzalez de Mejia, E. (2017). Natural pigments: stabilization methods of anthocyanins for food applications. *Comprehensive Reviews in Food Science and Food Safety*, *16*(1), 180-198.

Further considerations

Human subjective responses are often contextual and conditional.

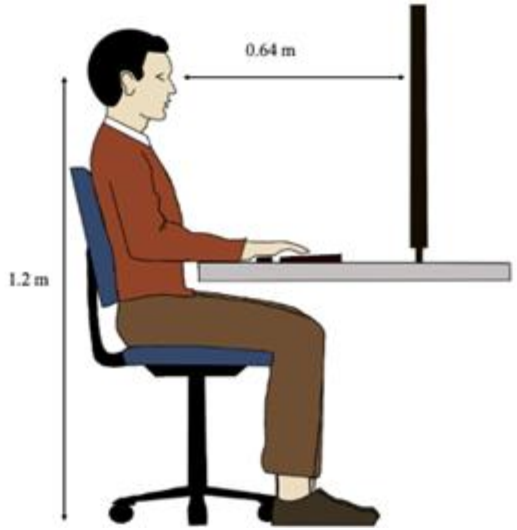
A single metric is likely too simple to quantify occupants' overall mood.

https://imotions.com/wp-content/uploads/2024/03/Emotional-Reactions-scaled.webp

Is it possible to analyze granular subjective responses (go beyond good/bad)?

Study 1

- **50 images**
- **4 subjective ratings: preference, complexity, clarity, colorfulness**
- **12 IQMs**



Wang, Y., & Durmus, D. (2022). Image quality metrics, personality traits, and subjective evaluation of indoor environment images. *Buildings*, *12*(12), 2086.

Study 1

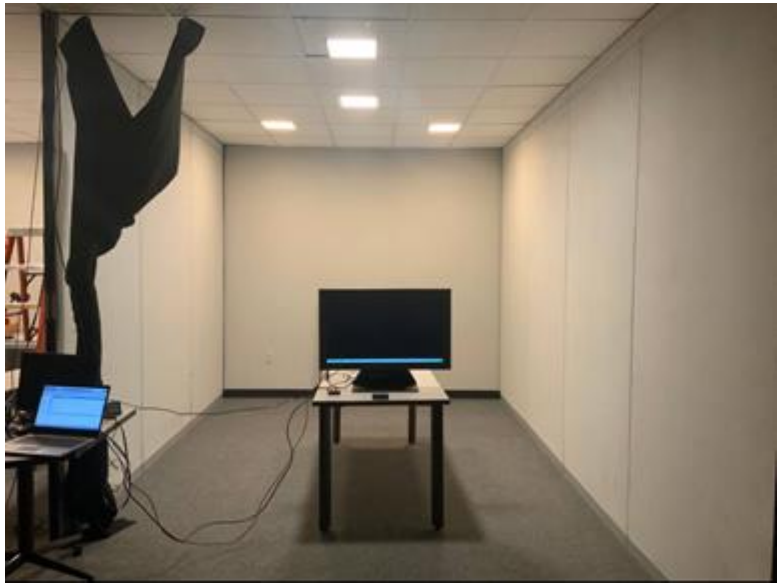
Some of metrics predicted subjective evaluations, but none could predict preference.

Metric	Preference	Complexity	Clarity	Colorfulness
MLV	r_s = -0.030 p = 0.839	r_s = 0.363 p = 0.010	r_s = 0.222 p = 0.121	r_s = 0.262 p = 0.066
BRISQUE	r_s = -0.060 p = 0.679	r_s = -0.318 p = 0.024	r_s = -0.075 p = 0.603	r_s = -0.152 p = 0.293
R_{spt}	r_s = -0.116 p = 0.424	r_s = 0.153 p = 0.288	r_s = -0.191 p = 0.184	r_s = 0.096 p = 0.509
SI	r_s = -0.080 p = 0.579	r_s = 0.388 p = 0.005	r_s = 0.337 p = 0.017	r_s = 0.288 p = 0.042
Spa. freq. slope	r_s = -0.067 p = 0.642	r_s = 0.217 p = 0.129	r_s = -0.168 p = 0.245	r_s = 0.190 p = 0.186
Entropy (*S*)	r_s = 0.144 p = 0.318	r_s = 0.249 p = 0.081	r_s = 0.304 p = 0.032	r_s = 0.371 p = 0.008
Colorfulness (*M*)	r_s = 0.083 p = 0.564	r_s = 0.268 p = 0.060	r_s = -0.034 p = 0.815	r_s = 0.727 p < 0.001
RMS contrast	r_s = 0.040 p = 0.784	r_s = 0.044 p = 0.764	r_s = 0.088 p = 0.543	r_s = 0.163 p = 0.258
Euler	r_s = -0.117 p = 0.420	r_s = 0.295 p = 0.038	r_s = -0.149 p = 0.300	r_s = 0.256 p = 0.073
Energy (*E*)	r_s = -0.002 p = 0.990	r_s = -0.201 p = 0.163	r_s = -0.007 p = 0.964	r_s = -0.356 p = 0.011
Contour	r_s = 0.072 p = 0.620	r_s = 0.419 p = 0.002	r_s = 0.191 p = 0.184	r_s = 0.389 p = 0.005
Fractal dimension	r_s = 0.172 p = 0.233	r_s = -0.275 p = 0.053	r_s = -0.103 p = 0.176	r_s = -0.356 p = 0.011

Wang, Y., & Durmus, D. (2022). Image quality metrics, personality traits, and subjective evaluation of indoor environment images. *Buildings*, *12*(12), 2086.

Study 2

- 12 images
- 5 subjective ratings: preference, complexity, clarity, colorfulness, interest
- 2 display x 4 illuminance levels
- 17 IQMs + lighting metrics



Display luminance	Horizontal illuminance (lx)	Target luminance (cd/m²)			Background luminance (cd/m²)				
		White	Gray	Dark	Left wall	Right Wall	Opposite Wall	Ceiling	Light Source
Low (50 cd/m²)	50	50	23	1	4	4	5	3	930
	150	51	24	1	14	13	11	9	3322
	450	51	24	1	40	46	26	26	10130
	900	52	24	1	82	84	80	57	12160
High (250 cd/m²)	50	255	96	3	5	4	4	3	973
	150	258	110	3	12	12	14	9	3189
	450	259	117	3	39	41	34	27	10100
	900	263	120	4	83	82	65	59	12340

Wang, Y., & Durmus, D. (2025). Effect of display luminance and ambient illuminance on the perceived quality of indoor environment images. *Journal of the Society for Information Display*.

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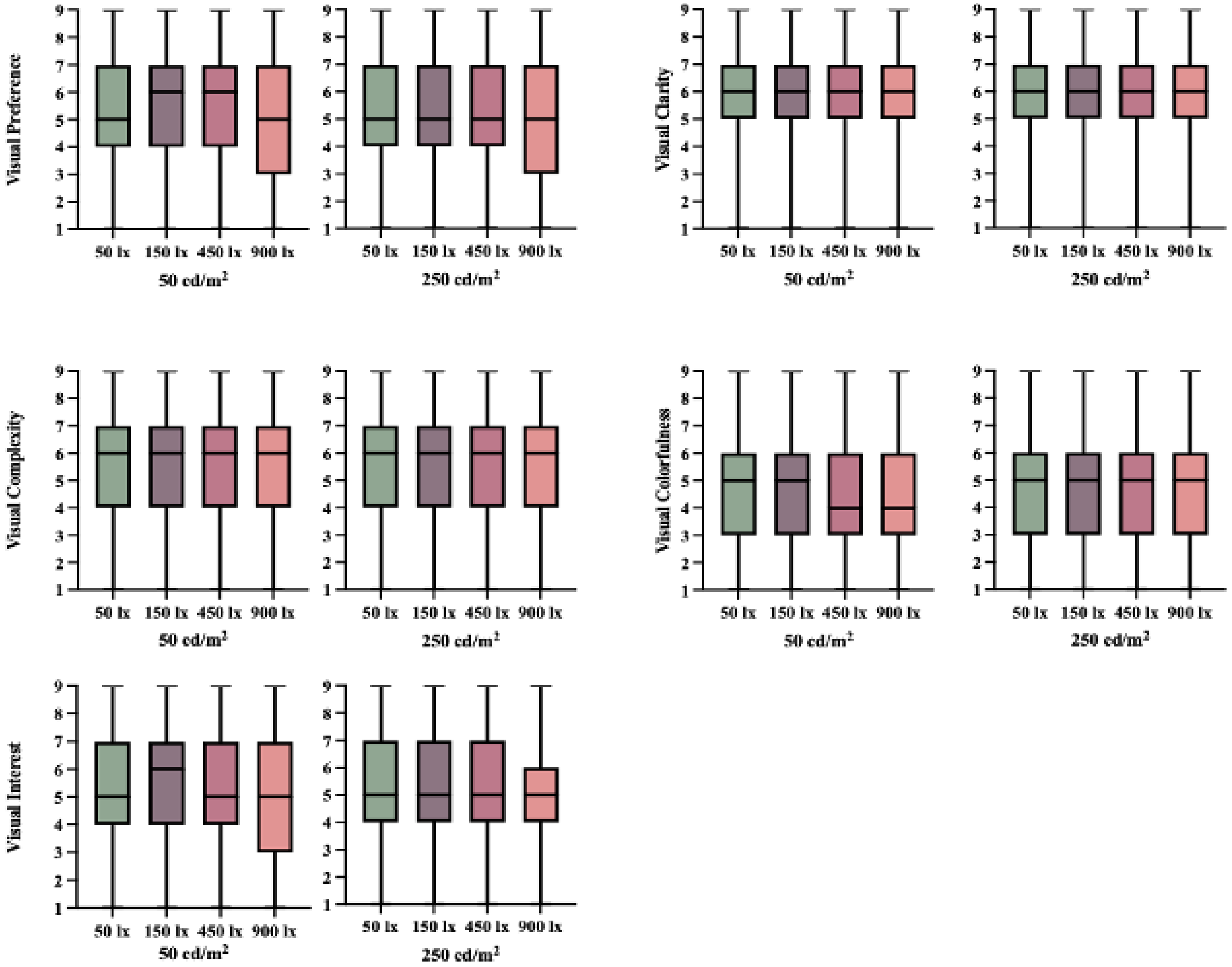
Study 2

Lighting conditions were secondary to IQMs.

That is, neither display nor ambient lighting impacted subjective evaluations.

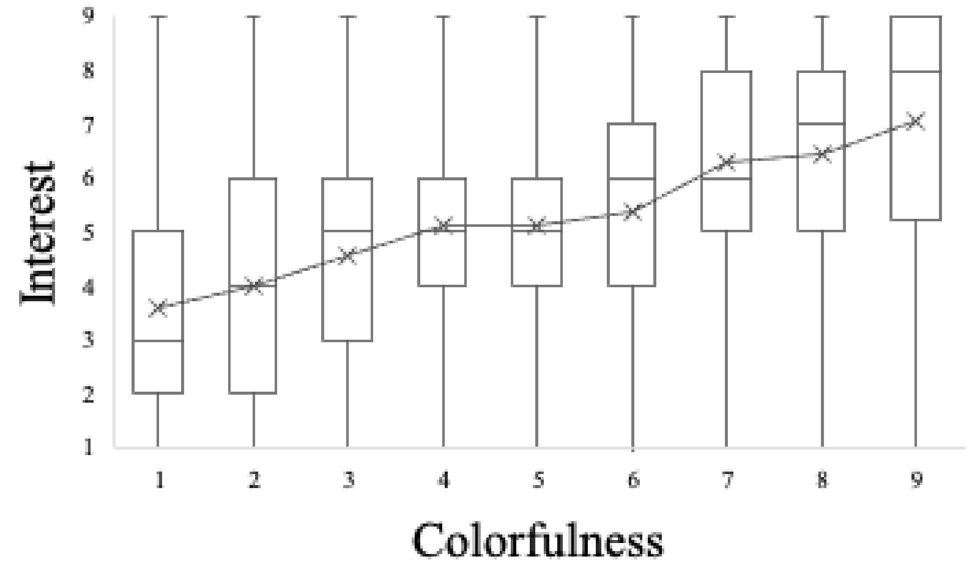


Wang, Y., & Durmus, D. (2025). Effect of display luminance and ambient illuminance on the perceived quality of indoor environment images. *Journal of the Society for Information Display*.

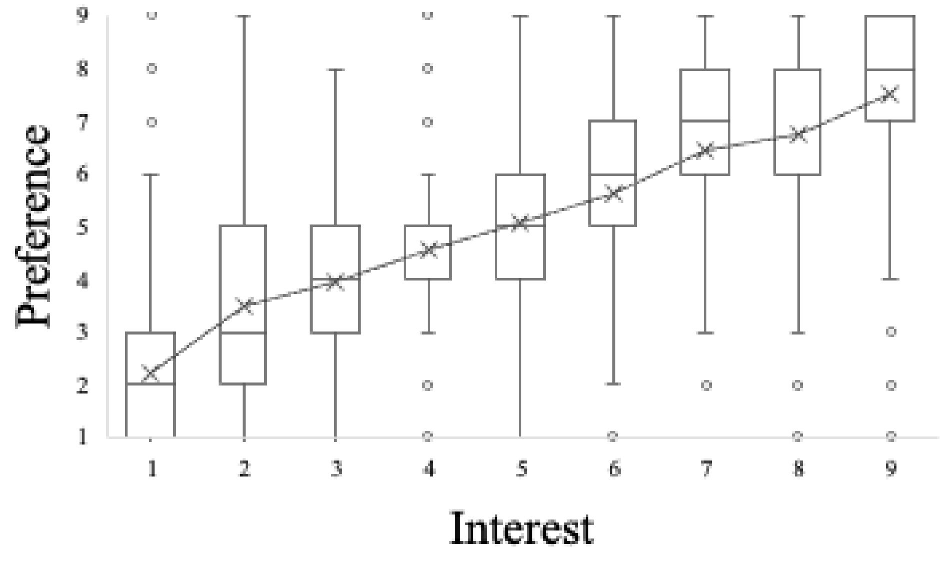
Study 2

We found correlations between subjective ratings.

Colorfulness increased interest, and interest increase preference.



ρ = 0.40



ρ = 0.57

Wang, Y., & Durmus, D. (2025). Effect of display luminance and ambient illuminance on the perceived quality of indoor environment images. *Journal of the Society for Information Display*.

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Study 2

Some of the metrics showed accurate predictions for subjective ratings, including preference.

However, correlations were not always very strong.

***0.05**
****0.01**

Metrics	Complexity	Preference	Clarity	Colorfulness	Interest
MLV	0.404**	0.01	0.026	0.496**	0.184**
BRISQUE	-0.098**	-0.016	-0.042**	-0.060**	-0.054**
R_{spt}	0.176**	0.016	-0.123**	0.195**	0.017
SI	0.435**	-0.059**	0.012	0.479**	0.115**
α	0.234**	-0.051**	-0.116**	0.247**	0.018
S	0.101**	-0.009	0.126**	-0.022	0.024
M	0.136**	0.059**	-0.037*	0.399**	0.094**
RMS	0.215**	0.053**	-0.068**	0.203**	0.103**
Euler	0.367**	-0.205**	-0.108**	0.288**	0.004
Energy	-0.216**	0.017	0.093**	-0.247**	-0.131**
Contour	0.311**	0.060**	0.154**	0.241**	0.158**
FD	-0.439**	0.153**	0.001	-0.434**	-0.081**
NIQE	-0.269**	0.058**	0.046**	-0.305**	-0.068**
C^*_{ab}	0.333**	-0.098**	-0.005	0.356**	0.056**
EBCM	-0.216**	0.017	0.092**	-0.247**	-0.131**
Brightness	-0.193**	-0.082**	0.110**	-0.364**	-0.172**
L^*_{ab}	-0.284**	-0.003	0.129**	-0.377**	-0.140**
$L_{v,\text{ display set}}$	-0.01	-0.037*	-0.018	0.031*	-0.022
$L_{v,\text{ display}}$	-0.151**	-0.036*	0.049**	-0.162**	-0.091**
$E_{\text{background}}$	0.006	-0.035*	0.014	-0.016	-0.031
$E_{v,\text{ eye}}$	0.022	-0.073**	0.035*	0.050**	-0.037*

Wang, Y., & Durmus, D. (2025). Effect of display luminance and ambient illuminance on the perceived quality of indoor environment images. *Journal of the Society for Information Display*.

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Can IQMs accurately assess window view quality?

Study 3

Experiment data collected from a VR study

- 30 images representing different window view conditions.
- A typical open-plan office window views.
- Window view quality rating from 40 participants

16 Image quality metrics

Contrast
- Edge-based contrast measure
- Root mean square

Clarity
- Maximum local variation
- Blind/Referenceless Image Spatial Quality Evalua-

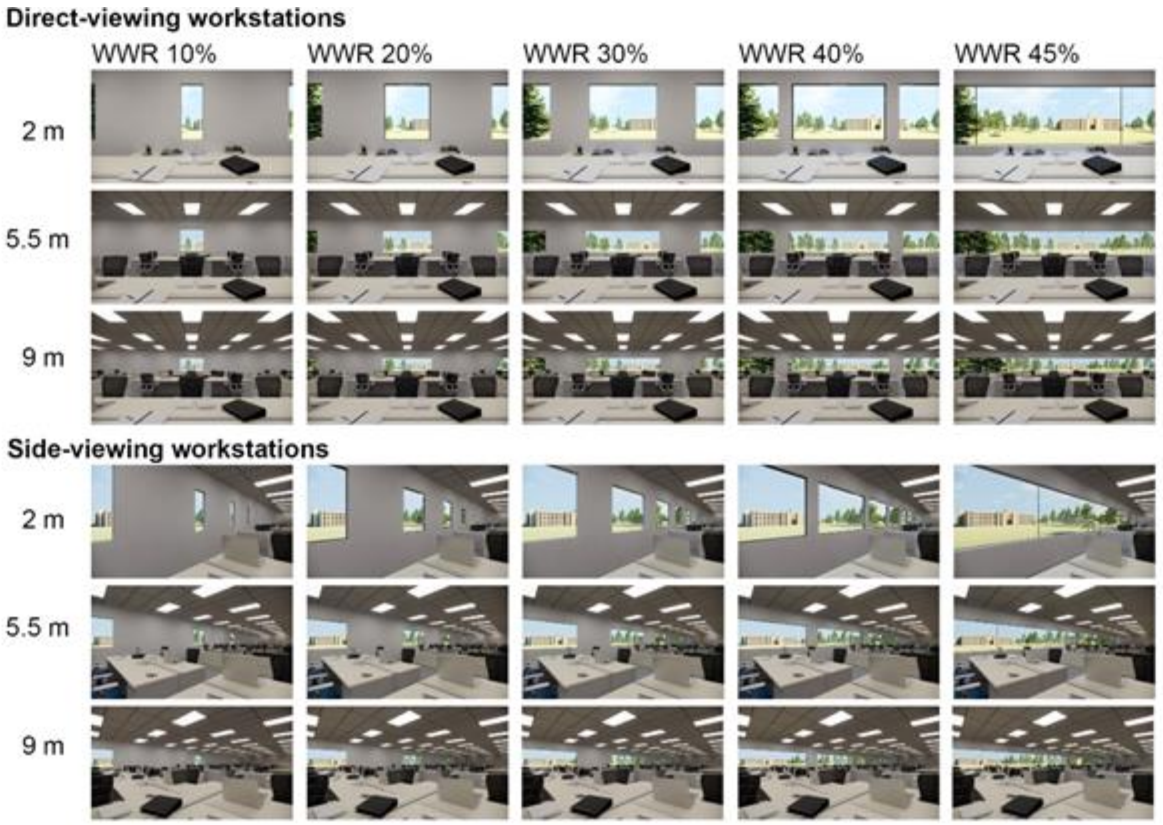
General Image Quality
- Energy
- Euler Number
- Contour
- Naturalness Image Quality Evaluator
- Brightness

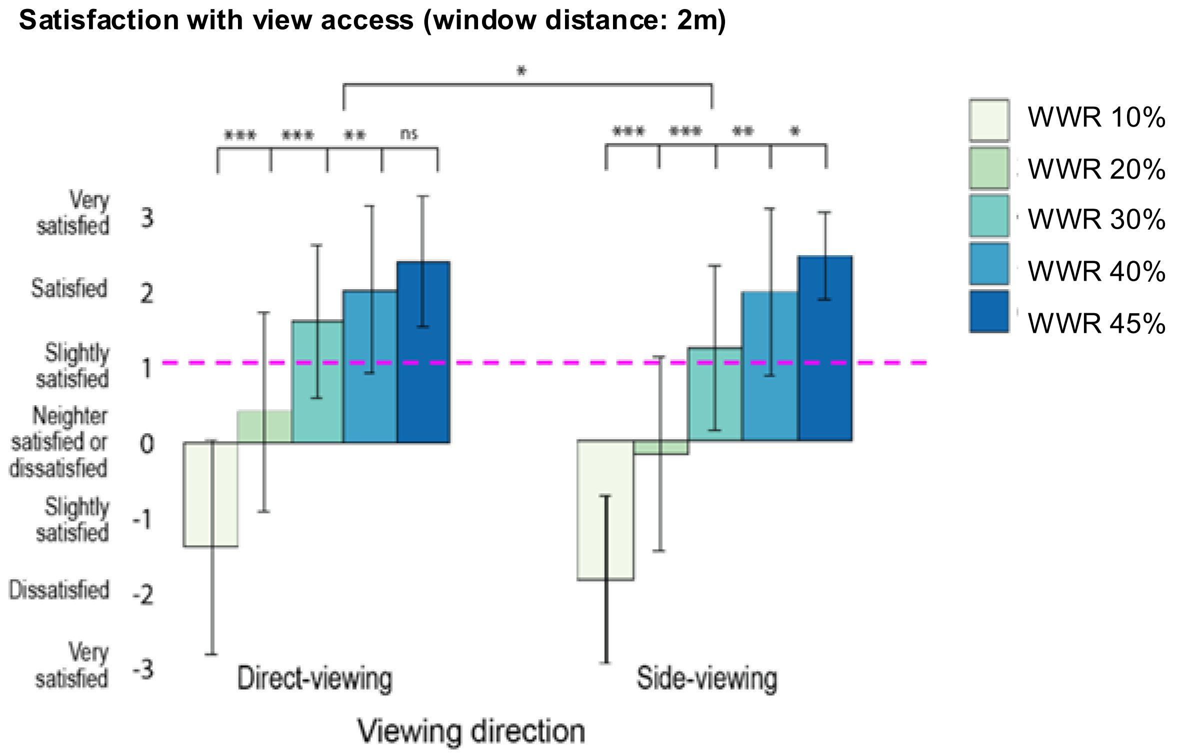
Complexity
- Detectability Suprathreshold
- Entropy
- Spatial Information
- Fractal Dimension

Color
- Chroma
- Colorfulness

Study 3

30 VR images depicting various views of a typical open-plan office workstation





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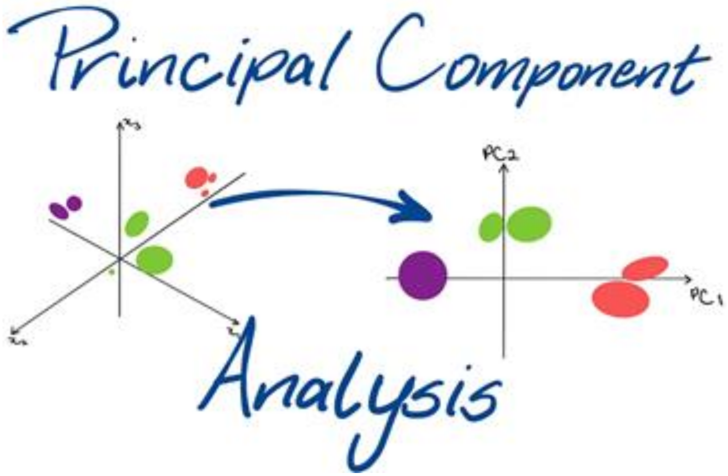
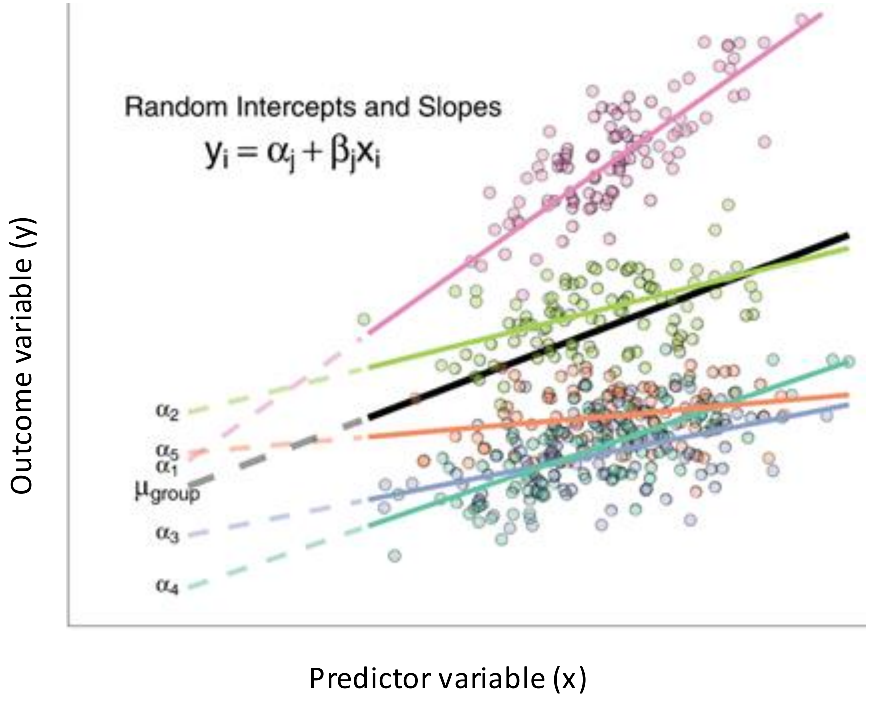
Study 3

Data analysis

- Principal Component Analysis (PCA)
  - Interpretation of numerous variables
  - Condense 16 IQMs into a smaller set of composite variables
- Cumulative Linear Mixed Model (CLMM)
  - Assessment of the significance of each image metric
  - Estimate the predictive power for of each metric for view quality



https://towardsdatascience.com/understanding-principal-component-analysis-ddaf350a363a

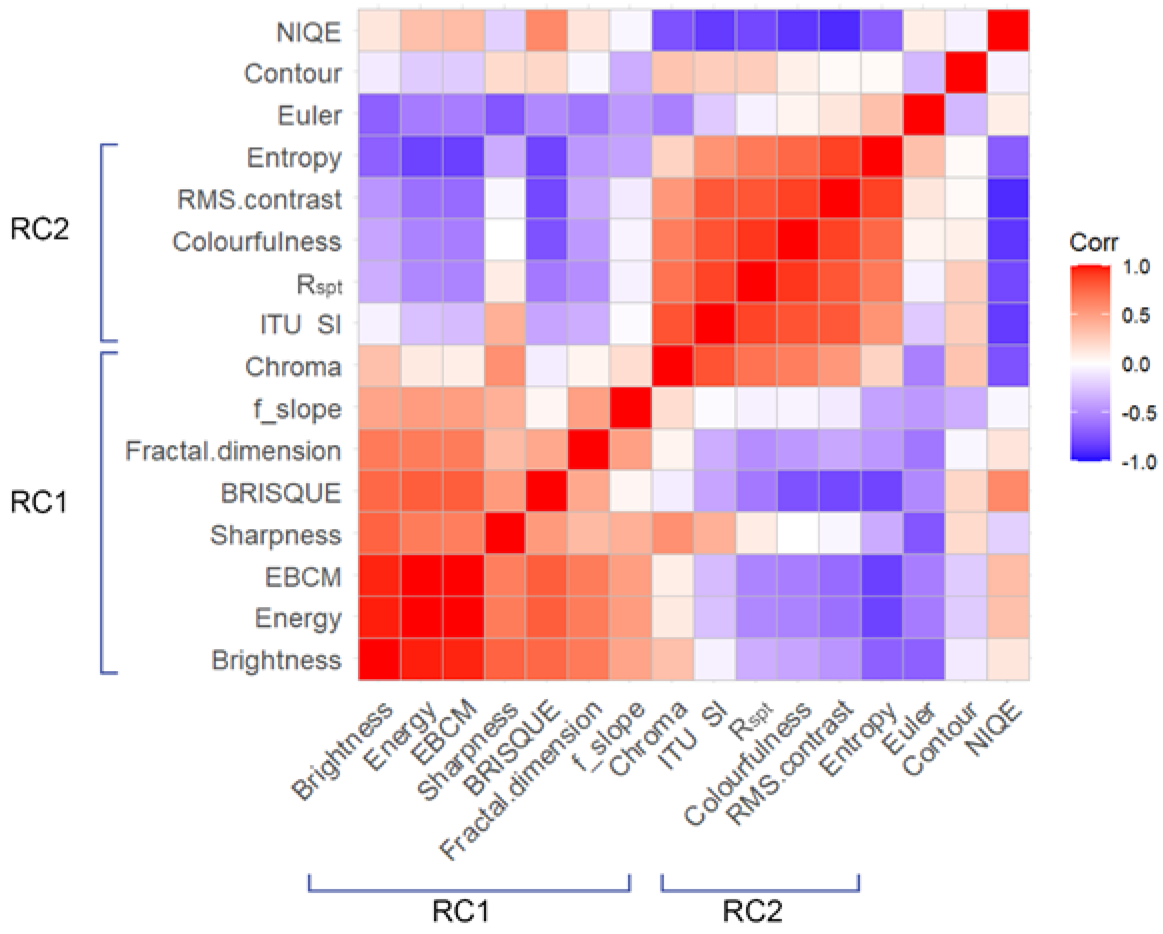


Harrison, X. A., Donaldson, L., Correa-Cano, M. E., Evans, J., Fisher, D. N., Goodwin, C. E. D., Robinson, B. S., Hodgson, D. J., & Inger, R. (2018). A brief introduction to mixed effects modelling and multi-model inference in ecology. PeerJ, 6, e4794. https://doi.org/10.7717/peerj.4794

Study 3

Principal component analysis (PCA)

- Correlation matrix of 16 IQMs
- RC1 and RC2 represent the two principal components and their relative orders.
- The higher the value, the most positively correlated the two variables are.
- The closer the value to -1, the most negatively correlated they are.



Study 3

Cumulative Linear Mixed Model: Comparison of performance for each image quality metric

Metrics	β	SE	p		R^2_C	R^2_M
Chroma	2.09	0.09	< .001	***	0.65	0.60
ITU SI	1.34	0.06	< .001	***	0.41	0.36
NIQE	-1.12	0.05	< .001	***	0.40	0.35
Colourfulness (*M*)	1.21	0.06	< .001	***	0.36	0.31
R_{spt}	1.32	0.07	< .001	***	0.34	0.29
RMS contrast	0.78	0.04	< .001	***	0.28	0.24
Euler	-0.98	0.07	< .001	***	0.21	0.17
Sharpness	0.47	0.04	< .001	***	0.14	0.10
Contour	0.57	0.05	< .001	***	0.13	0.09
Entropy	0.40	0.04	< .001	***	0.11	0.08
BRISQUE	-0.32	0.05	< .001	***	0.07	0.04
F slope (α)	0.24	0.04	< .001	***	0.06	0.03
Brightness	0.16	0.04	< .001	***	0.04	0.01
Fractal dimension	0.16	0.05	0.0027	*	0.04	0.01

Energy, EBCM: Not significant

Study 3

Cumulative Linear Mixed Model

The final model

Metrics	β	SE	p	
Intercept	0.49	0.70		
Chroma	2.41	0.15	< .001	***
ITU SI	-0.74	0.13	< .001	***
NIQE	-0.51	0.08	< .001	***
R^2_C	0.69			
R^2_M	0.64			

Conclusion

- IQA metrics can offer an alternative method, that is quantifiable, repeatable, and automated.
- Color saturation, spatial information and naturalness are the primary dimensions of IQA.
- This alternative method can help designers in building design process.
- IQA-based view quality assessment can help autonomous (intelligent) building systems balance energy and occupant needs.

https://www.buildings.com/smart-buildings/article/33018134/smart-building-products-for-hvac-and-communications

Conclusion

Study limitations

Based on a limited dataset of images:

- Number of images tested (30)
- Type of images (VR image only)
- Sample size (view quality ratings from 40 participants)

Future Studies

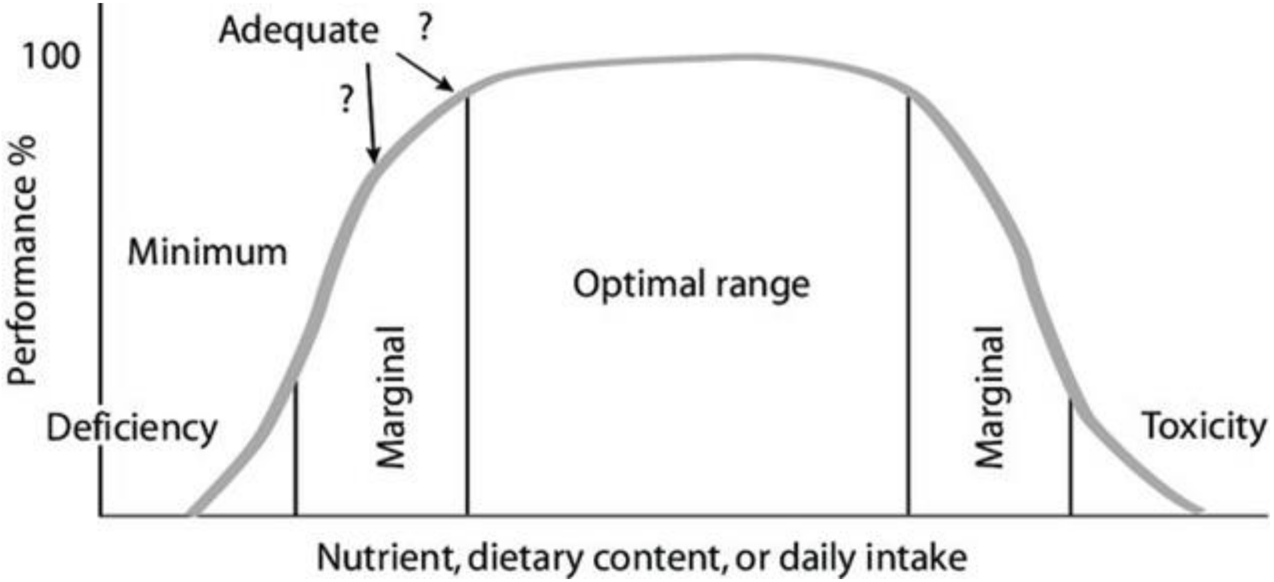
Enhance the model's accuracy and generalizability by incorporating additional image datasets:

- Diverse view conditions (varying content and room settings)
- Various view image formats (e.g., screen images and physical spaces)
- Integration of computer vision analysis

Develop a view quality assessment framework through image quality metrics

Final thoughts

- Subjective ratings can be contextual and widely varied.
- Some IQMs (and sometimes people too) assume there is a reference (optimal) condition.
- Rather than finding “the optimum,” we should aim for “acceptability” or “detectability” ranges.



Pagan, J. D. (2009). Nutrient requirements: applying the science. *Advances in Equine Nutrition IV*, 1.

Questions?

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This concludes The American Institute of Architects Continuing Education Systems Course

Thank you for attending!

Please scan the QR code to rate it and leave feedback.

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