

Classification of Indonesian Women Skin Tone by Visual Observation and Skin-Colorimeter

CO_280

Damayanti, Hilda¹; Devitama, Festy¹; Muizzuddin, Neelam^{2*}

¹Research and Development, Paragon Technology and Innovation, Banten, Indonesia;
²Skin Clinical Research Consultants, New York, USA

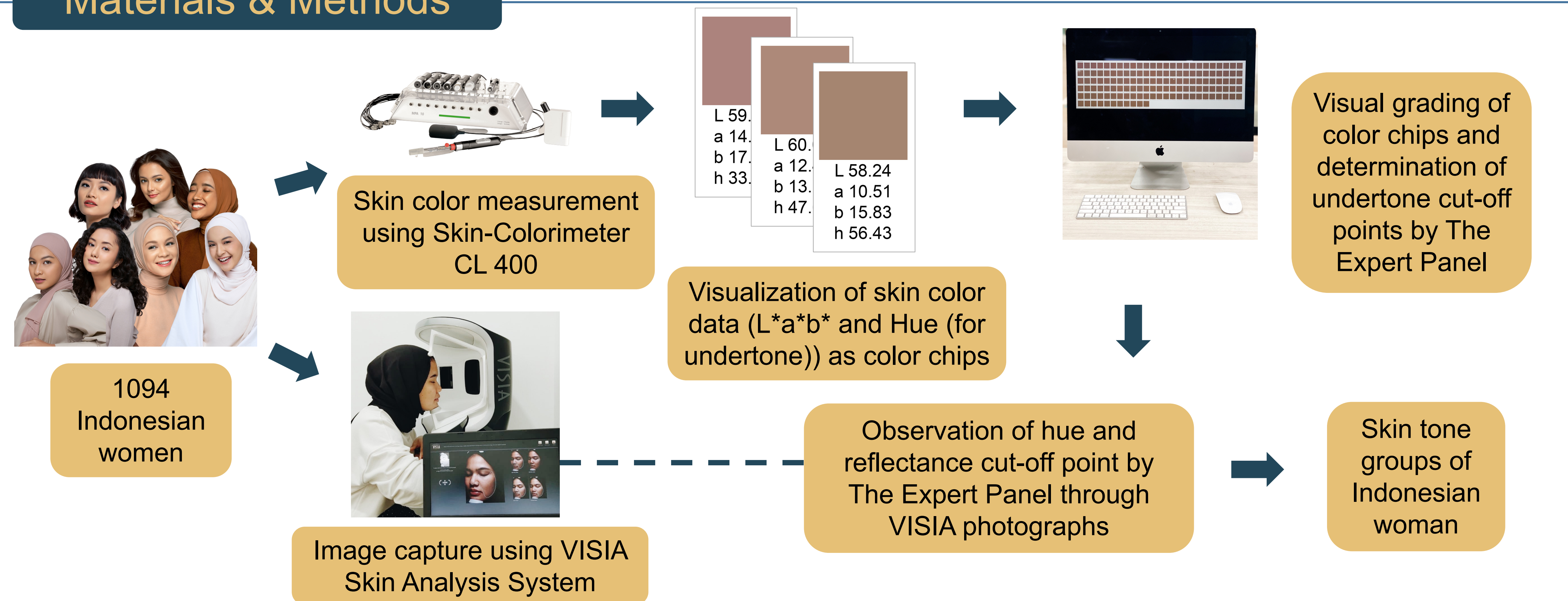
Introduction

Skin color lies in the center of the perception of beauty and literature is teeming with complex models to define and characterize skin color.

With great ethnic and race diversity, Indonesians exhibit different physical characteristics, one of which is skin color. Understanding the differences in skin color among Indonesians can assist formulators in developing ideal foundation makeup to target their diverse needs.

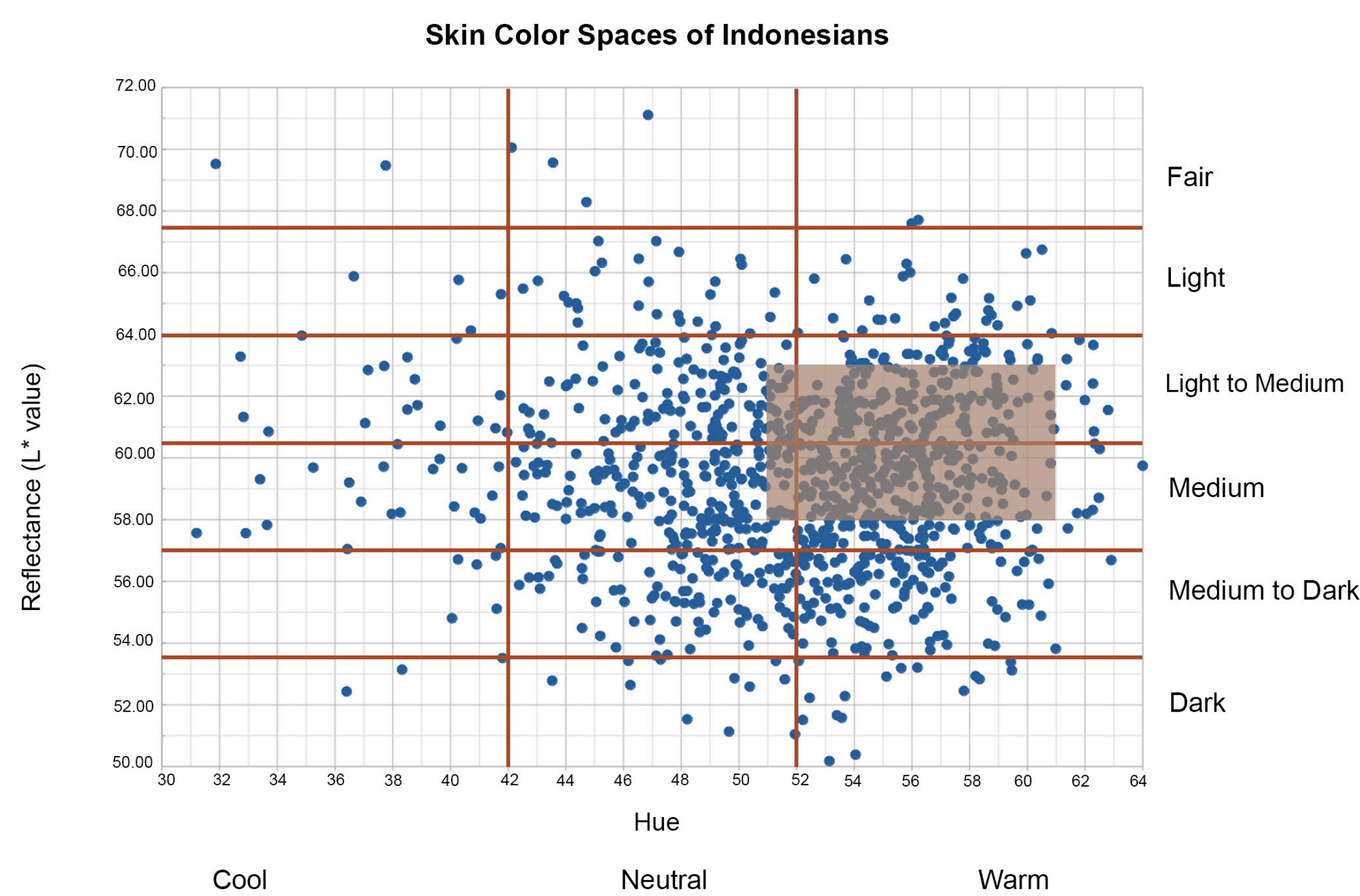
The purpose of this study was to present a simple model for Indonesian skin color distribution which can be used as a platform for the study of preferable makeup color for this population.

Materials & Methods



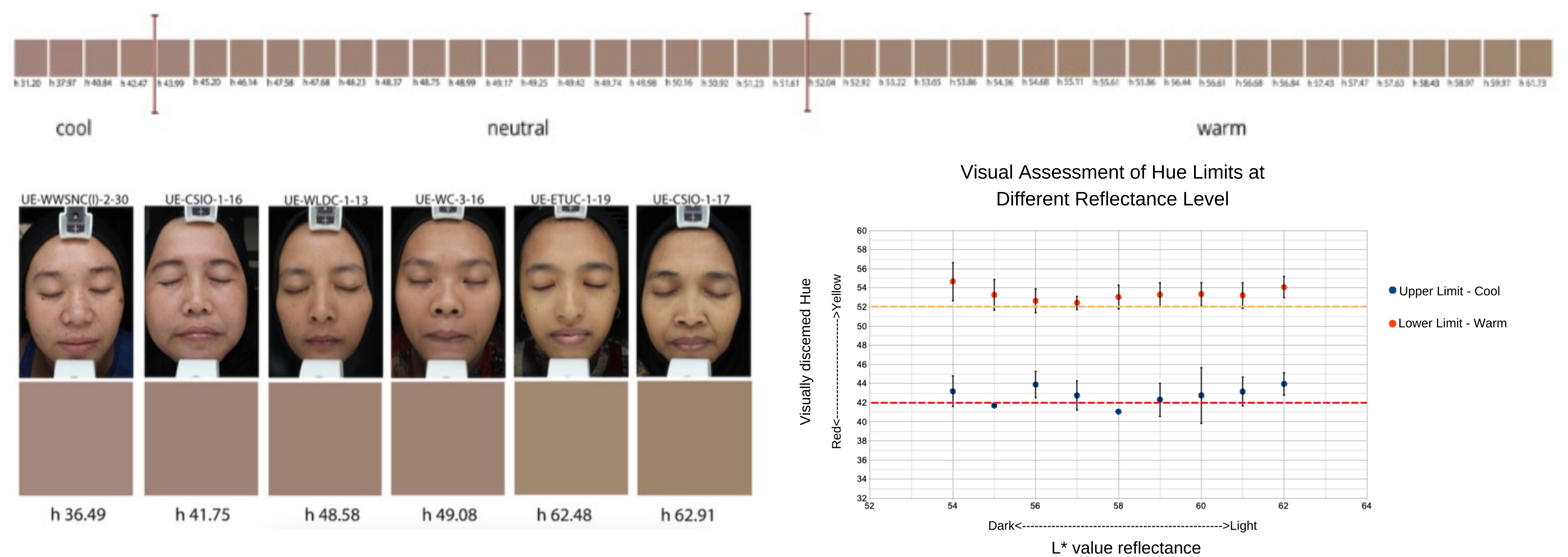
Results & Discussions

Color Space



The color spread of 1094 Indonesian female subjects showed a hue range of 30-64 and reflectance (L^* value) range of 50-68, with the highest concentration was within the box where the highest hue between 51-61 and L^* value between 58-63. The population distribution was divided into three hue levels labelled as "cool" having hue values below 42, "warm" having hue values above 52 and "neutral" for all tones in between. L^* values sorted in ascending order arbitrarily divided the subjects into six levels of reflectance groups; 3.5 L^* values apart : dark (the group in which the L^* values were lowest), followed by medium-dark, medium, light-medium, light and fair (the lightest)".

Color Visualization



There was a color shift trend from most red to most yellow when the color chips series was sorted by hue value in ascending order. The Panel Expert observed color chips with sequential hue at each reflectance value and discerned visually the point at which the yellow color ceased to dominate and on the other end the limit at which red color ceased to dominate.

Below hue of 41-45 red color ceased to dominate and above 51-56 yellow coloration began to dominate skin tone. This data confirms the previous quantification in color space where hue below 42 was defined as "cool" tone and above 52 was defined as "warm" tone while all colors between these limits were defined as "neutral" tone.

The colorimeters allow elimination of variations in extrinsic factors and display color in the form of numbers which can be easily studied without bias. This study shows a skin color distribution of Indonesian women population which can be a valuable tool for a clinician to be able to repeat a color evaluation from month to month with the same accuracy.

Conclusions

The findings of this study demonstrate a quantitative characterization of skin color of Indonesian women. This provides a platform for development of ideal color makeup products for this population.

Acknowledgements

This research was fully supported by Paragon Technology and Innovation.

References

- [1] Samson N, Fink B, Matts P. (2011) Interaction of skin color distribution and skin surface topography cues in the perception of female facial age and health. *J Cosmet Dermatol*; 10(1):78-84. doi: 10.1111/j.1473-2165.2010.00538.x.
- [2] Rigal JD, Abella ML, Giron F, et al. (2007) Development and validation of a new Skin Color Chart®. *Skin Res Technol*; 13(1):101-109.
- [3] Tuan L, Thattil P, Grody E, et al. (2015) System for cosmetics matching based on skin tone (U.S Patent No. 9,064,279 B1). U.S. Patent and Trademark Office;13
- [4] Fullerton A, Fischer T, Lahti A, et al. (1996) Guidelines for measurement of skin colour and erythema. A report from the Standardization Group of the European Society of Contact Dermatitis. *Contact Dermatitis*; 35(1):1-10.