



Assessing Direct-to-Film Color Accuracy in Textiles

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Introduction

- Printed textile market is a rapidly growing
- “Fast fashion” trend
- Environmental concerns
- Can direct-to-film (DTF) produce color accurate results leading to more sustainable slow fashion model?



Direct-to-Film Printing

- Prints on heat-transfer film transferred using adhesive powder
- Four step process
- Advantages of DTF
- Challenges of DTF



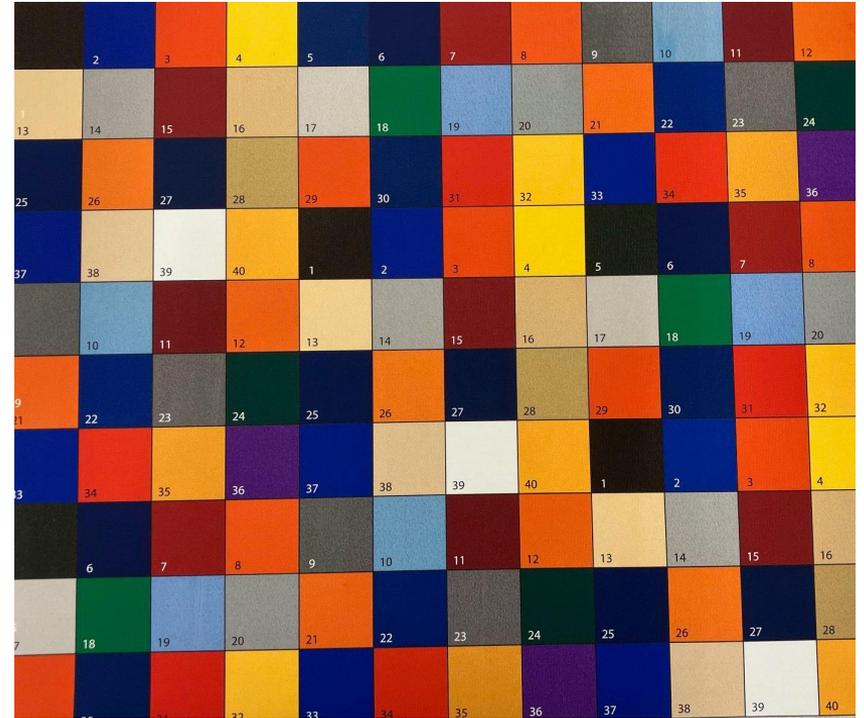


Research Questions



Methods

- Target preparation - 64 brand colors (ACC athletics)
- Three textiles (100% poly; 60/40 poly cotton; 50/50 poly cotton)
- Roland VersaSTUDIO BY-20 Direct-to-Film printer
- Pro World MP995 Tanspo heat press with T-Seal
- i1Basic Pro 3 Plus Spectrophotometer

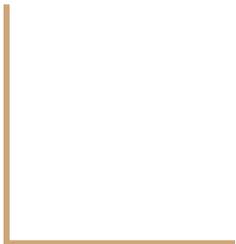


Procedures

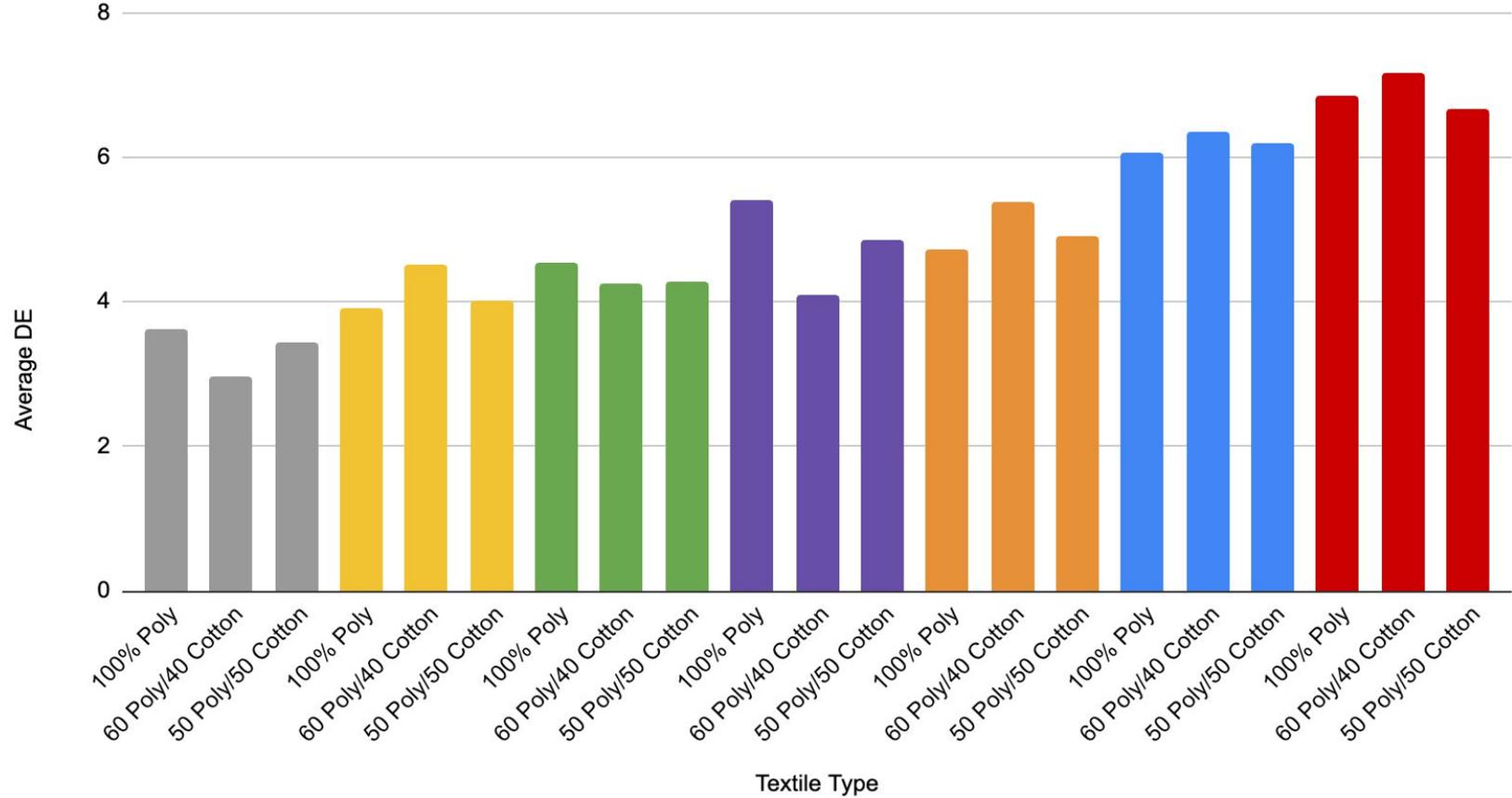
- Roland VersaSTUDIO BY-20 Direct-to-Film printer
 - Piezo inkjet technology
 - Cyan, Magenta, Yellow, Black, and White inks
 - Proprietary Roland adhesive powder (S-POWDER)
- Pro World MP995 Tanspo heat press with T-Seal
 - Heat S-POWDER; Press; Remove film, repress with T-Seal
- i1Basic Pro 3 Plus Spectrophotometer
 - D50/2° - 8mm aperture

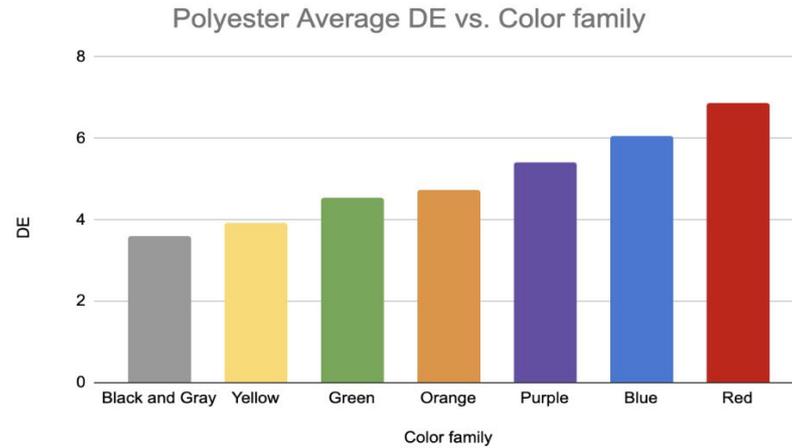
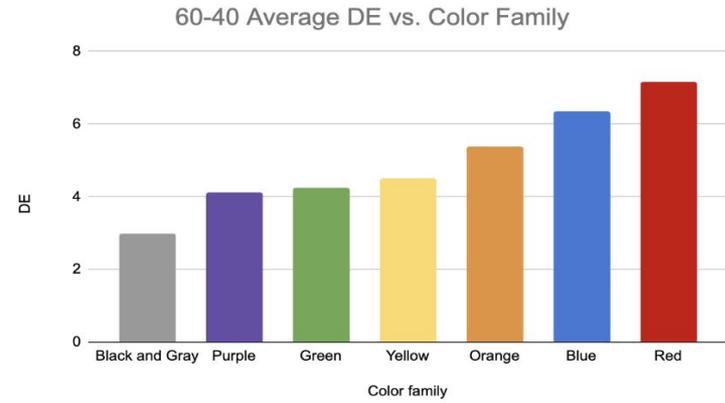
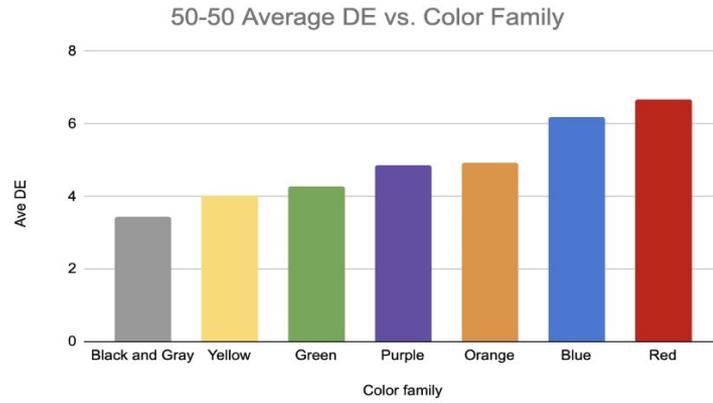


Results

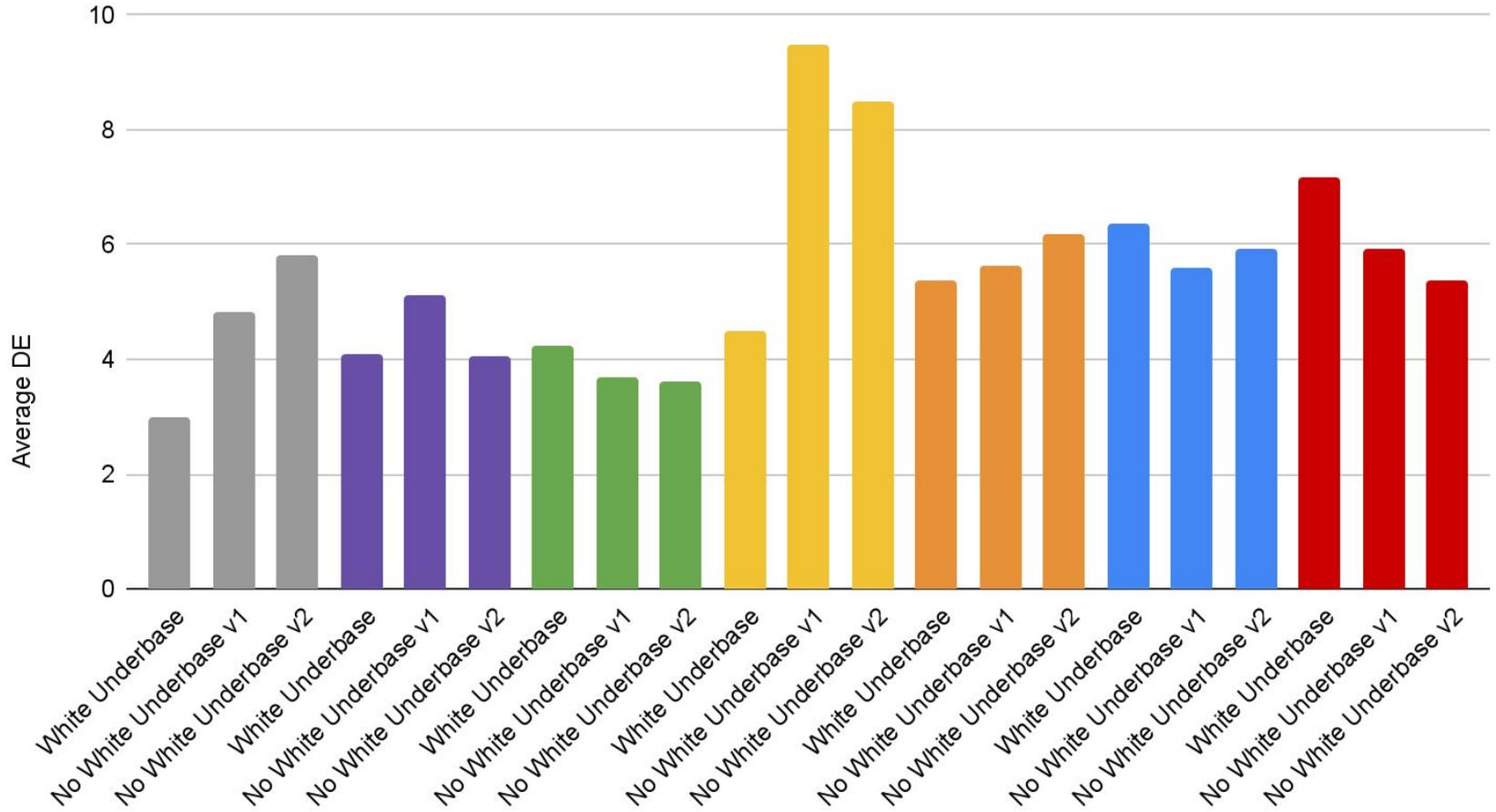


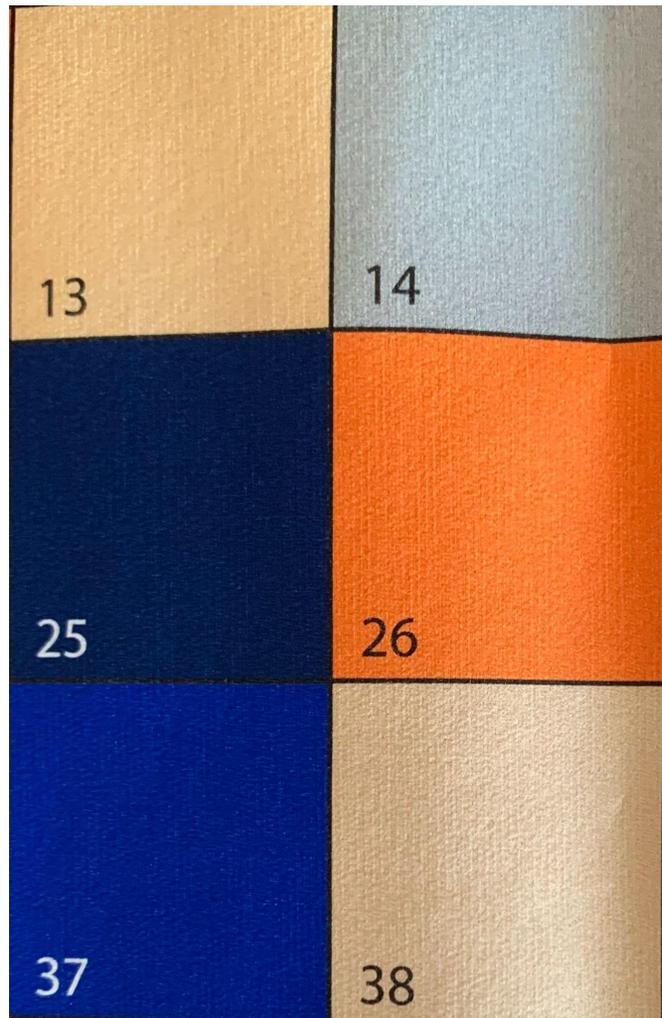
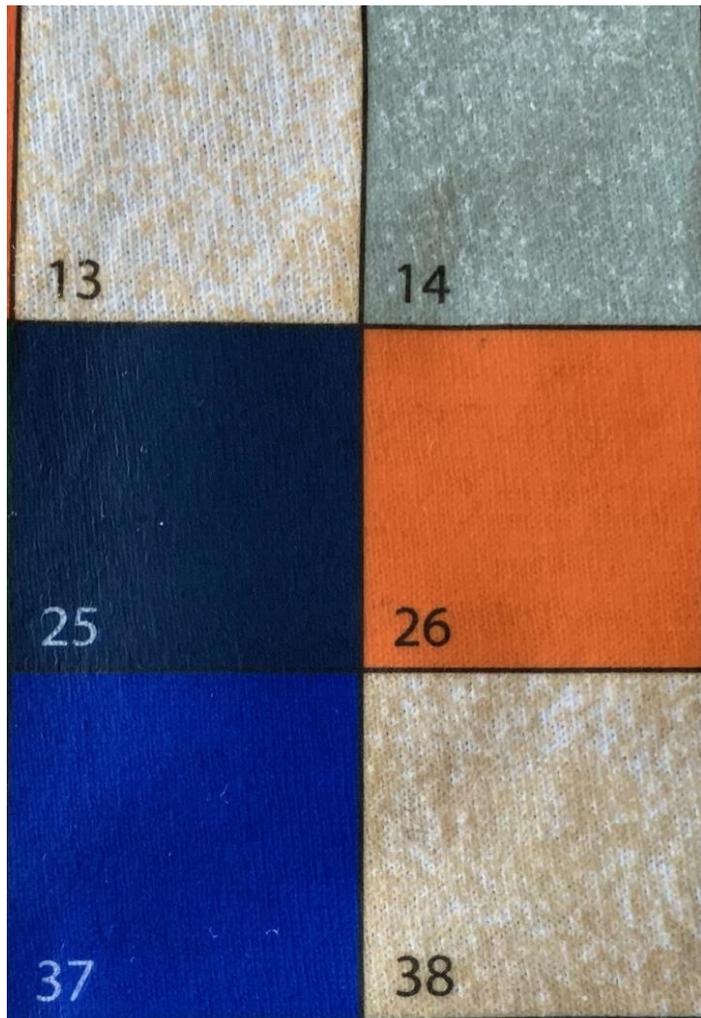
Average DE by Color Family and Textile





60-40 White Base vs. No White Base DE Comparison by Color Family





Discussion

- Mixed results
- Textile type & Color families
- Color accuracy



Conclusion

- Some color families harder to reproduce than others
- Most colors printed with DTF had acceptable Delta E's
- More research is needed on DTF

Future Research

- Color fastness
- More fabrics
- Custom color profiles
- Slow fashion & environmental implications

Thank you

Questions?

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