

Minimizing 3D Frame Reprints

Introduction

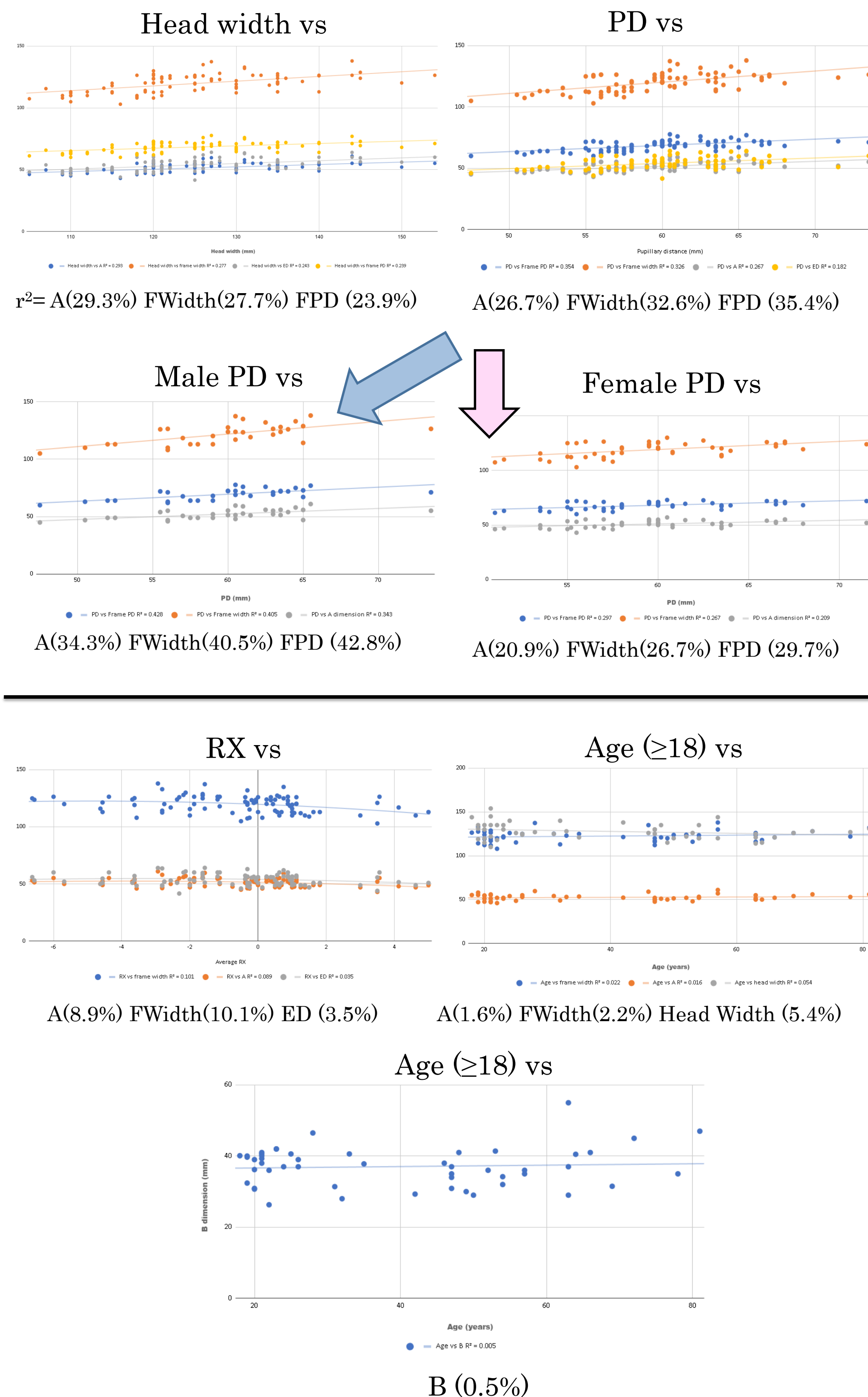
- Soon patients will be able to order custom fit 3D printed frames, but what size will your office recommend?
- Reprints will be slow and costly.
- How much correlation is there between the patients head width and frame dimensions: A, B, DBL, frame PD.
- Can other correlations be found to help predict ideal frame size, for example age, gender, and prescription strength?

Methods



- Head width measurements were taken in the University Eye Center from 96 patients and compared to various dependent variables.
- Linear regression lines were plotted and r^2 values were calculated.
- For prescription strength vs frame dimension a polynomial regression line was used.
 - *Reduced frame sizes should occur with both high minus and high plus prescriptions, thus a linear regression line would not fit.*
- Average RX was calculated by the average of the spherical equivalent of both eyes, unless the patient was anisometropic, then it was the spherical equivalent of the eye with larger magnitude prescription.
- Frame width was approximated by $2*A + DBL$.
- Variables collected and compared for correlation included: gender, age, OD sphere, OD cylinder, OS sphere, OS cylinder, OD pd, OS pd, frame sizes A, B, DBL, lens ED, and head width.

Results



Conclusions

- Using the patient's PD is equally valid as head width for recommending frame PD, frame width, and A dimension.
 - *Also requires no special devices or extra measurements*
- Age, after head growth stopped, did not impact frame size choice.
- Strong prescriptions and use of progressive lenses minimally effected frame size selection.
- Because PD and head width are equally accurate predicting frame sizes, future research could be done as the University Eye Center with the thousands of PD and frame measurements already on file.
- Making two groups based on sex slightly increased r^2 values for men and decreased it for women.

References

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