



What Do We Need to Understand to Improve Contact Lens Comfort?

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Disclosure

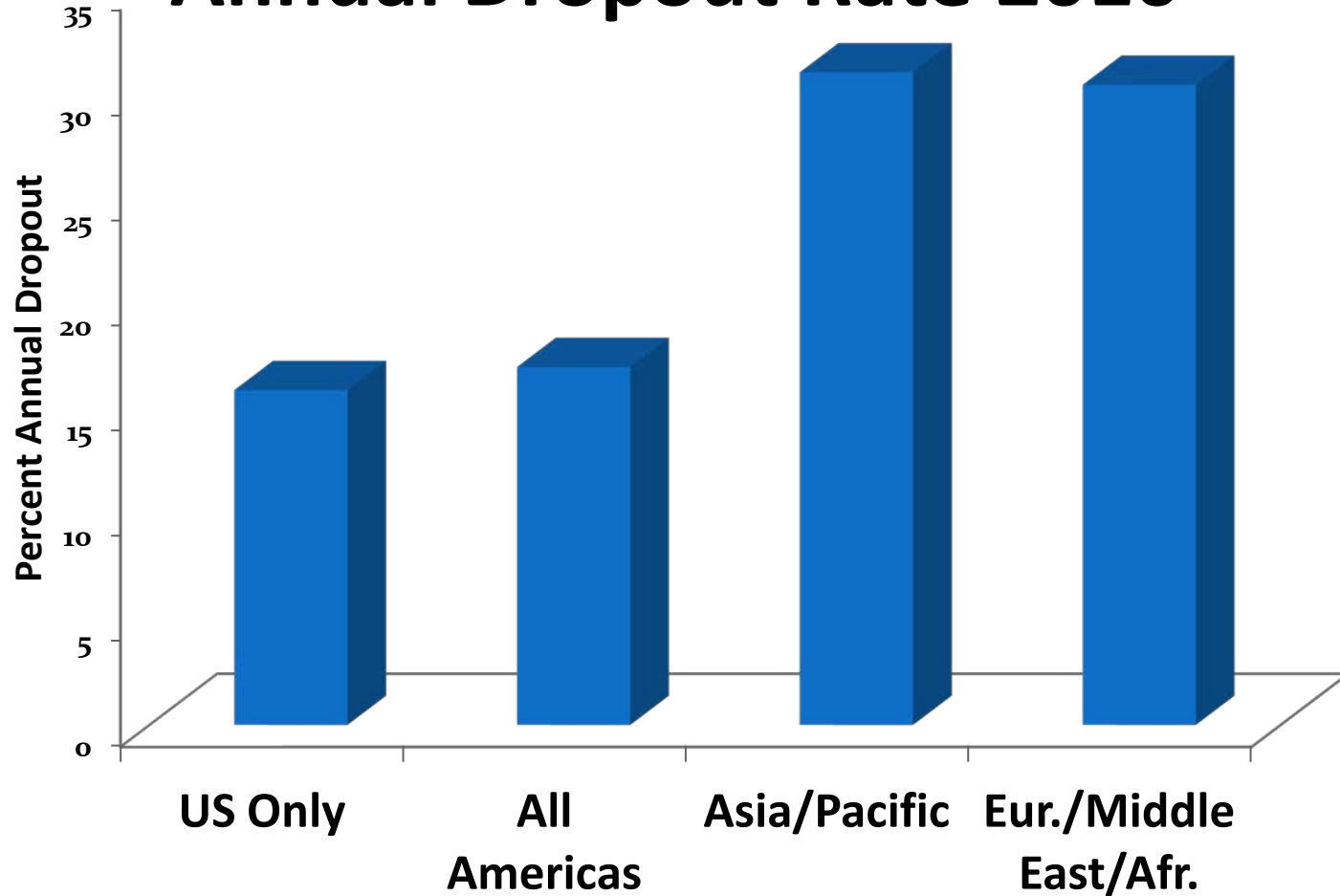
- Retired from Alcon Laboratories but have no stock or options from Alcon, or stock or options in Novartis.
- Consultant to Alcon Laboratories
- Consultant to NavaBay Pharmaceuticals
- Previously employed by Bausch and Lomb, Wesley-Jessen and Paco Pharmaceutical Services
- Hold Stock in Merck



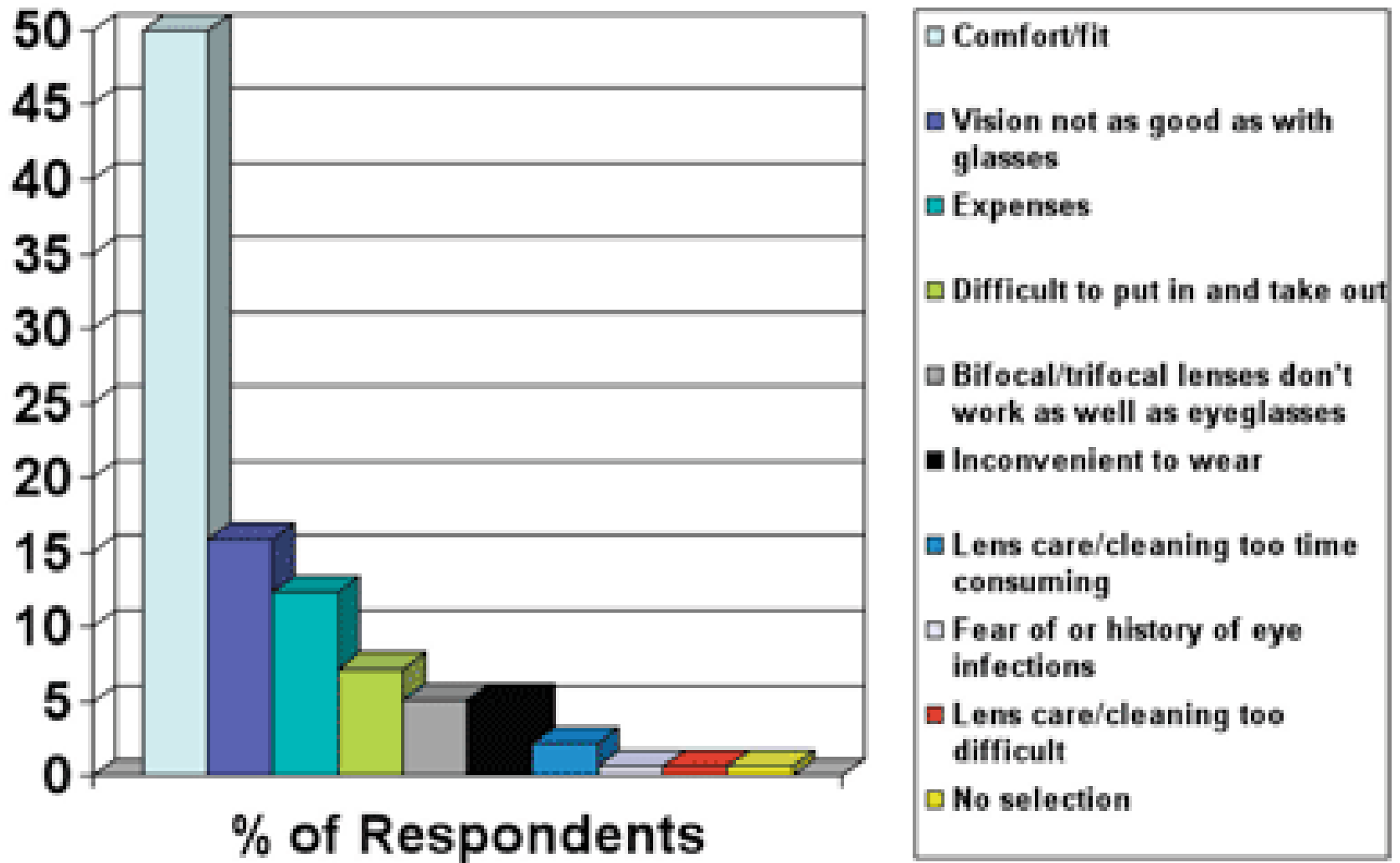
What is our experience with
comfort during Contact Lens wear?

2010

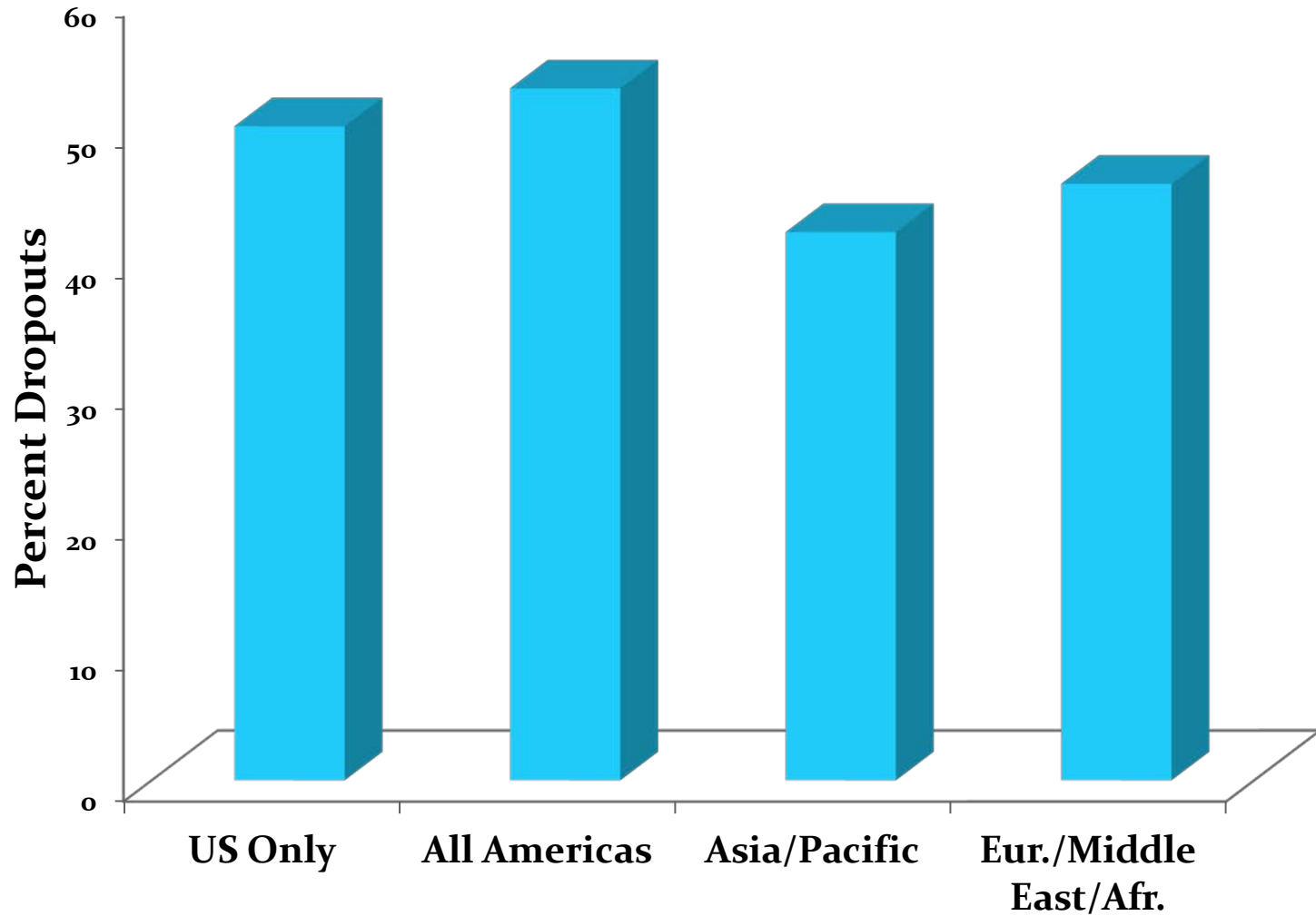
Annual Dropout Rate 2010



Number One Reason for Patient Drop Out



Percent of Dropouts for Comfort/Fit

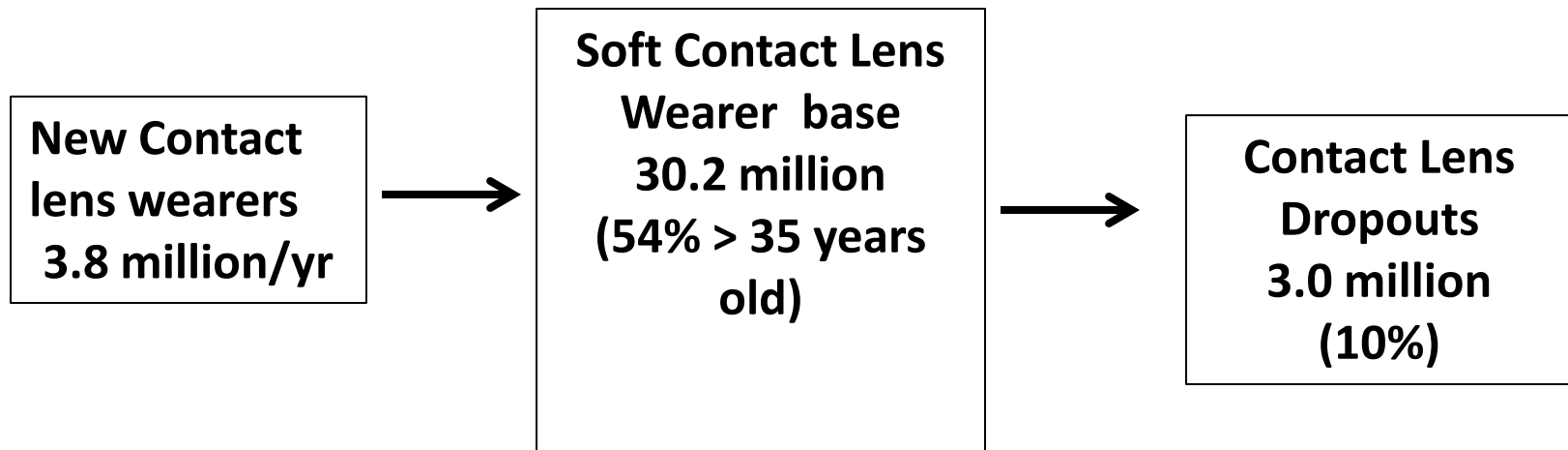




What is our experience with
comfort during Contact Lens wear?

2004

Estimated Rate of US Contact Lens Dropouts-2004



Growth of Contact Lens Wearers 2.7%(not counting refits)

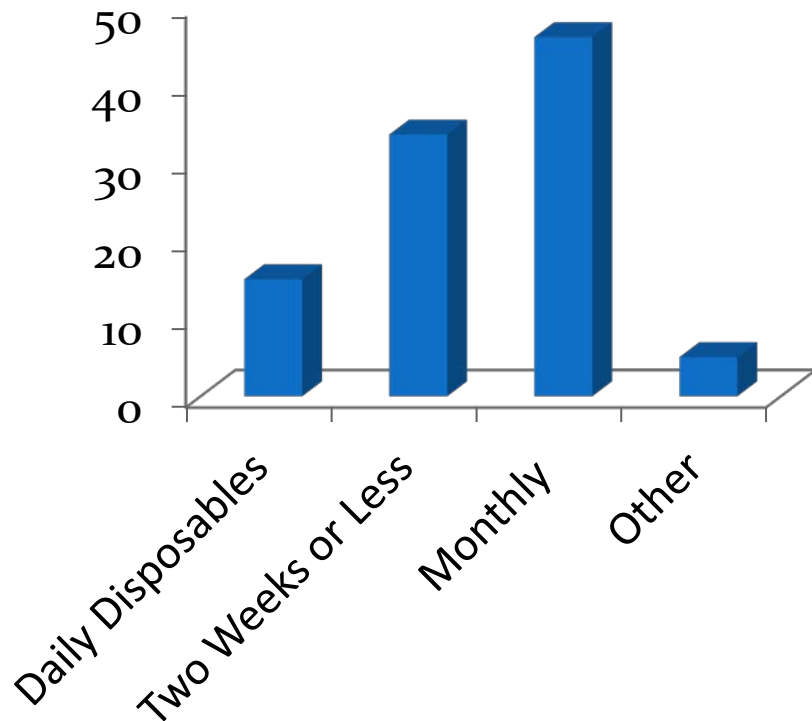


Who are our patients and what
do they wear?

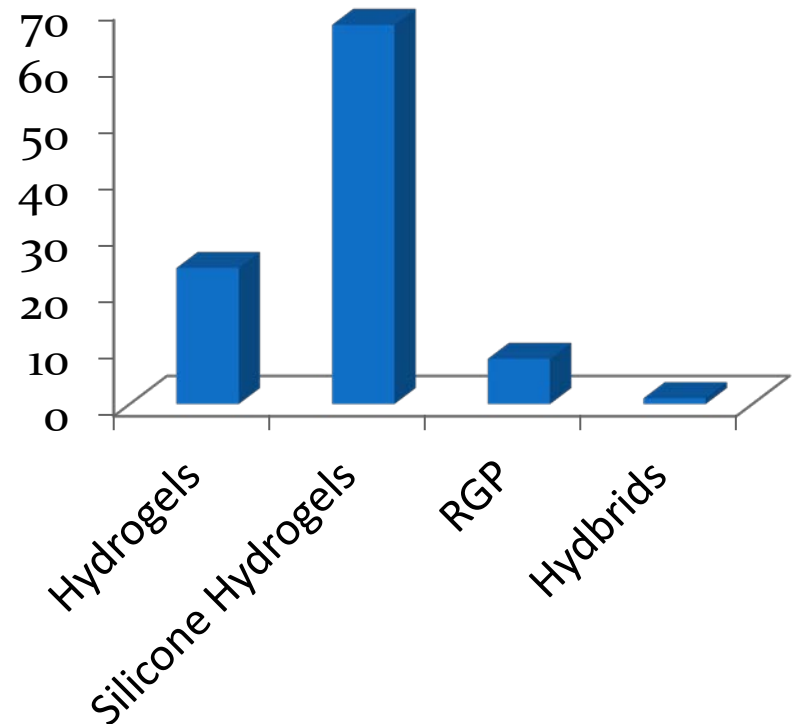
2011

2011 Distribution of Lenses and Wear Schedules

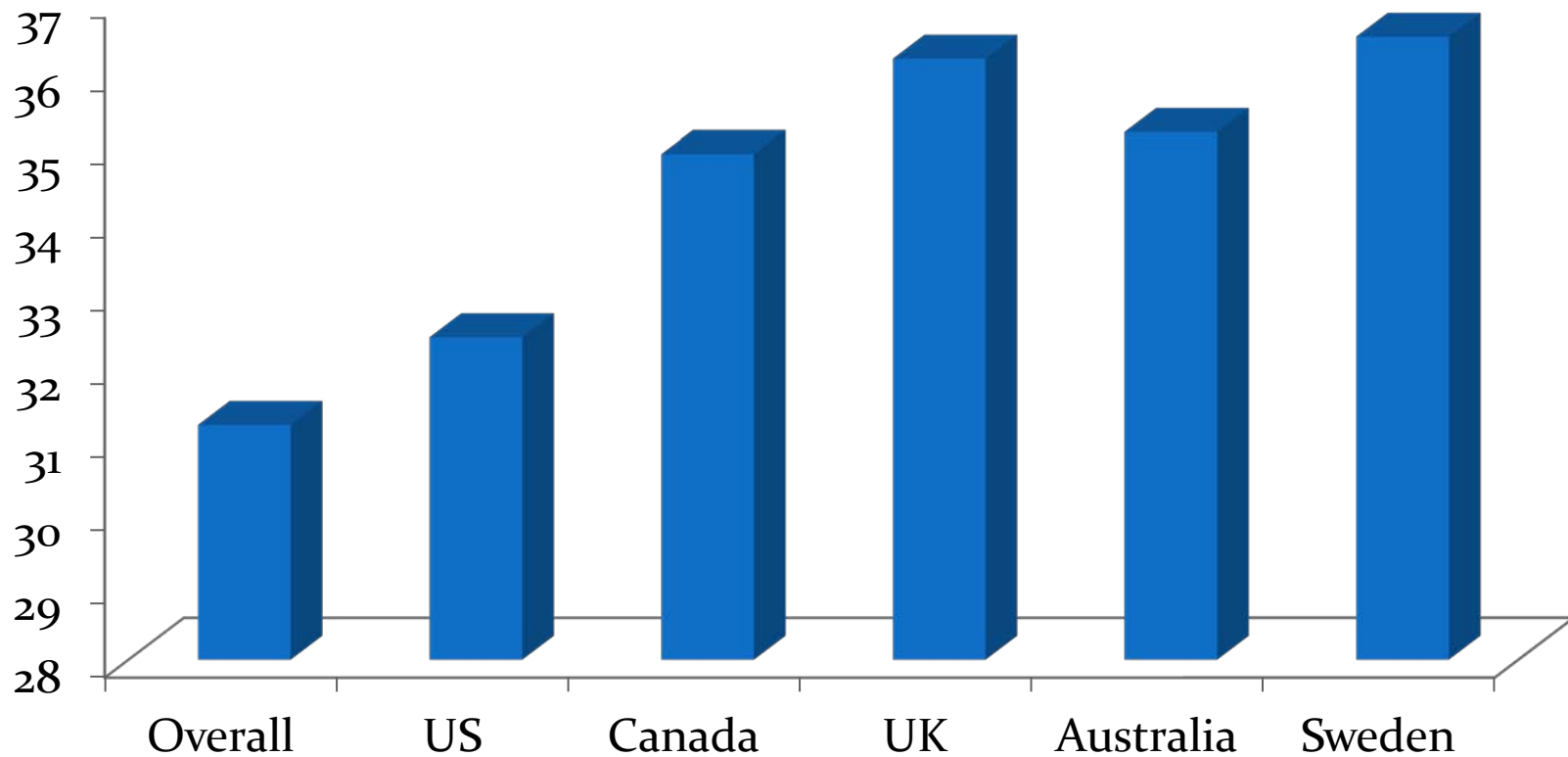
Percent of Wearers



Type of materials fitted



Average Age of Fits of Contact Lenses



What have been the approaches to improving comfort?

- Materials design and mechanical properties
- Contact Lens fit
- Cleaning
- Disposability
- Surface/Lens Treatments
- Care Systems



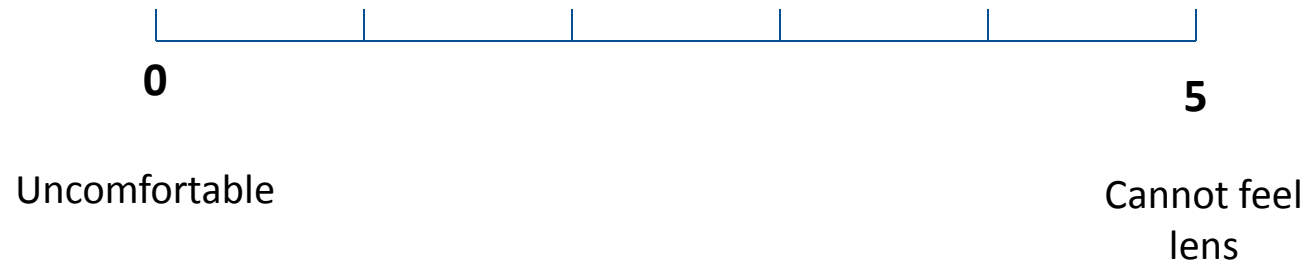
In order to design a product, there must be a way to measure the outcome of the design.

How have we been measuring comfort and are there better ways?

- Comfort Scales
 - Simple 0-5, 0-50, 0-100
 - Anchored with intermediate points defined

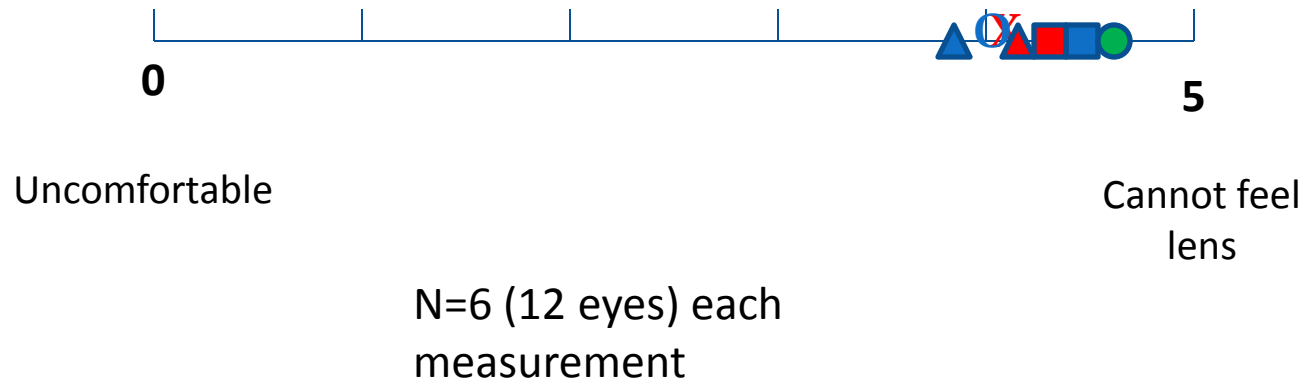
Simple Comfort Scales

Measured at instant
in time



Simple Comfort Scales

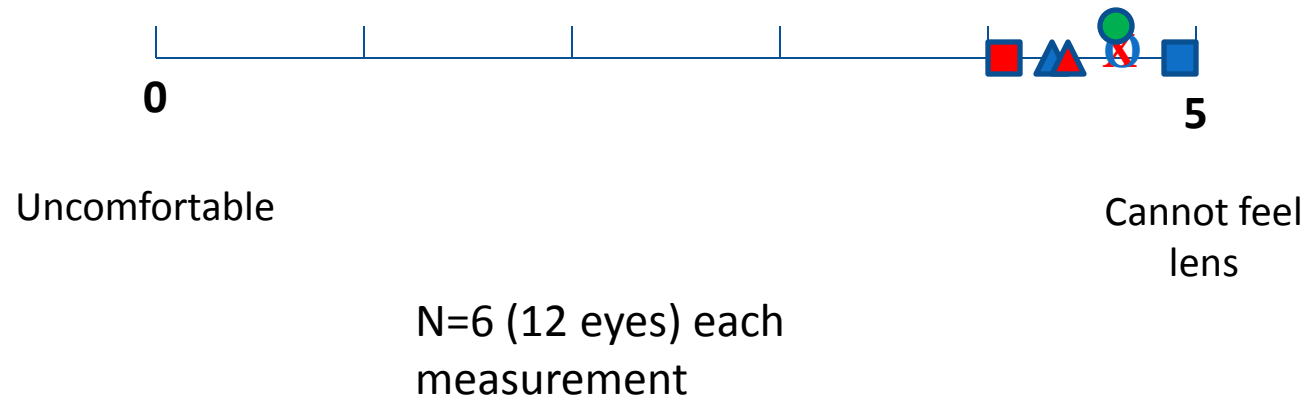
Measured at instant
in time (1 min)



Tranoudis I, Efron N. In Eye Performance of soft contact Lenses made from different materials. CL & Anterior Eye
2004; 27:133-148.

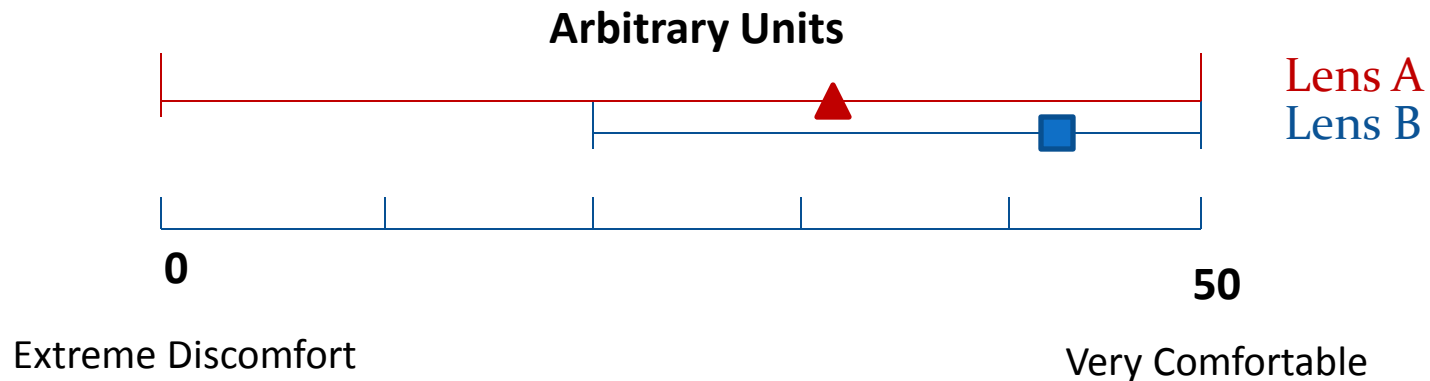
Simple Comfort Scales

Measured at instant
in time (6hrs)



Tranoudis I, Efron N. In Eye Performance of soft contact Lenses made from different materials. CL & Anterior Eye 2004; 27:133-148.

Simple Comfort Scales

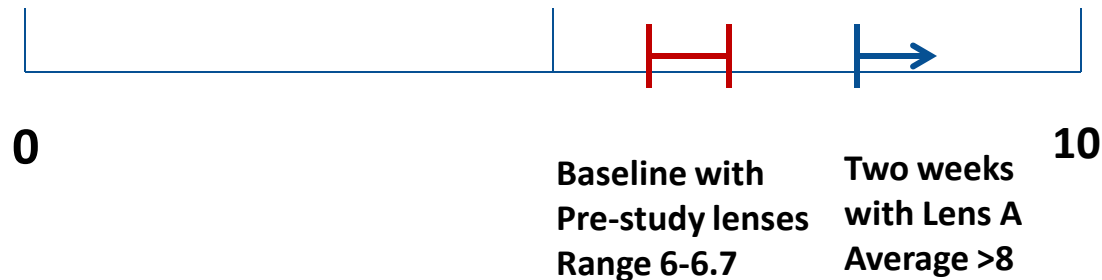


N=6 (12 eyes)

Morgan PB, Efron N, et al. Hydrogel Contact Lens Dehydration in Controlled Environmental Conditions . Eye& CL 2004; 30(2): 99-102.

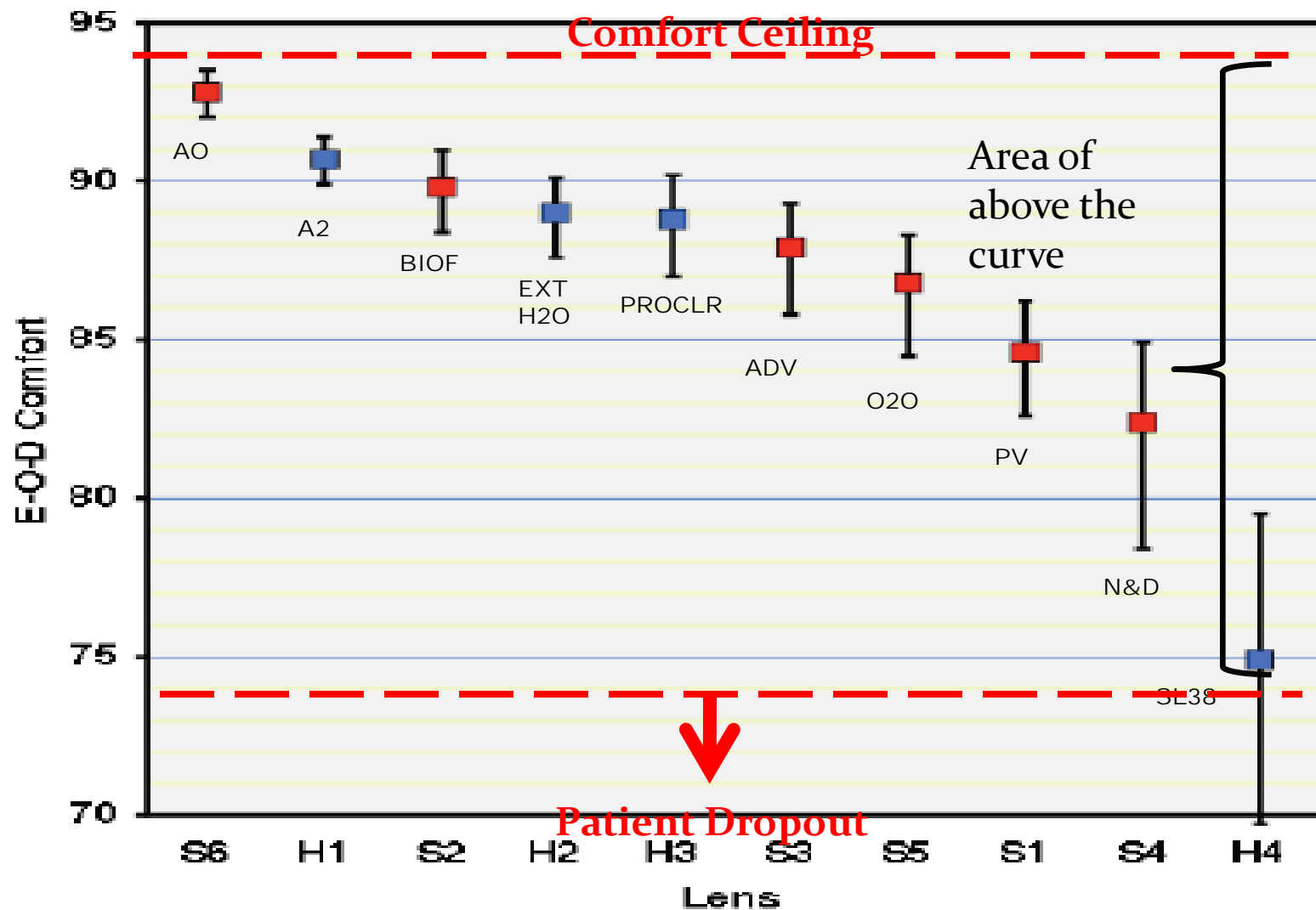
Clinical Data for Lens A

- N=50 patients, 2 weeks of wear

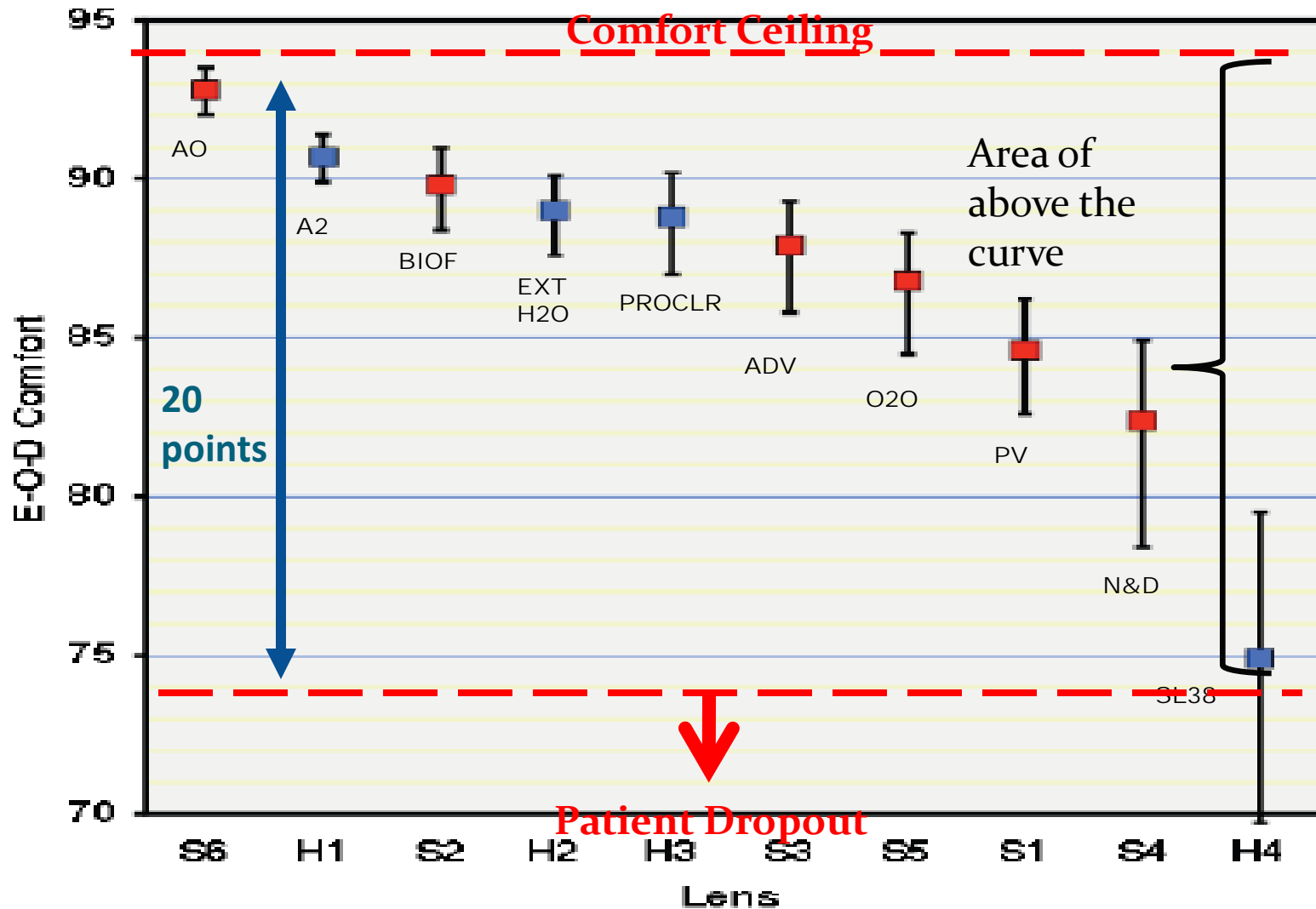


- At baseline 32% found lenses comfortable at the end of the day.
- After 2 weeks with lens A, 91.5% found the lens to be comfortable

Interpreting Comfort Data from Contact Lens Wearers



Interpreting Comfort Data from Contact Lens Wearers



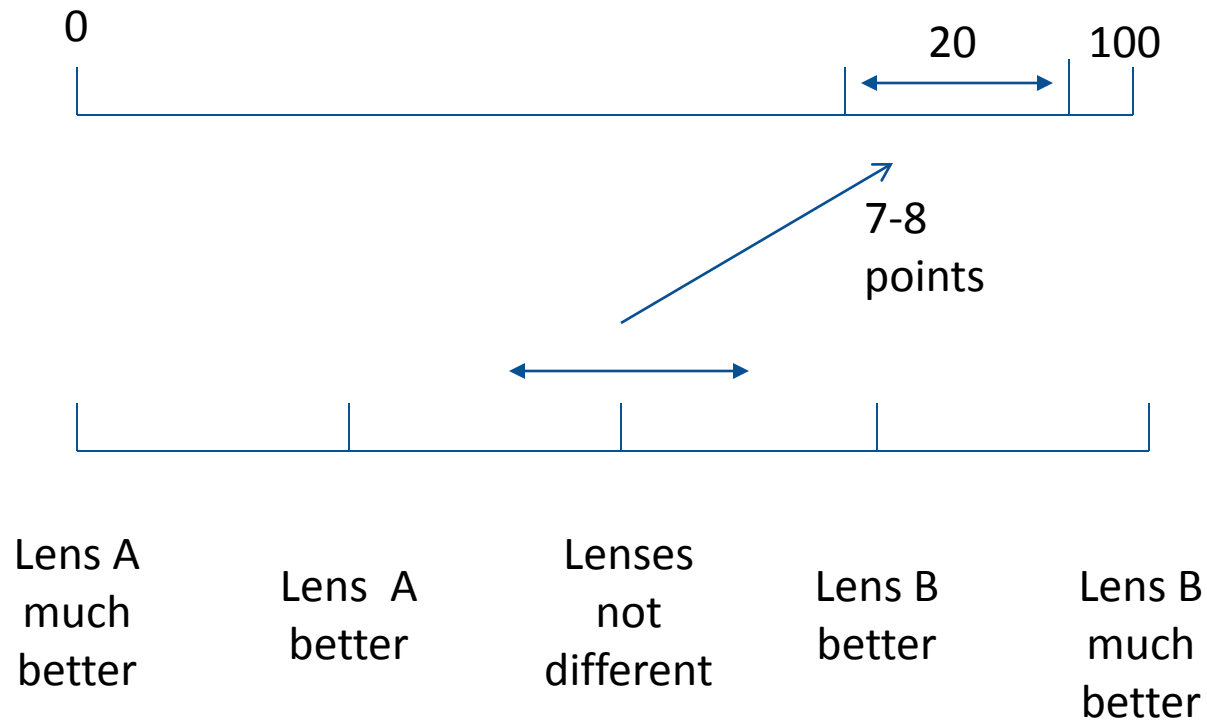
What is the minimum difference we can detect with these scales?



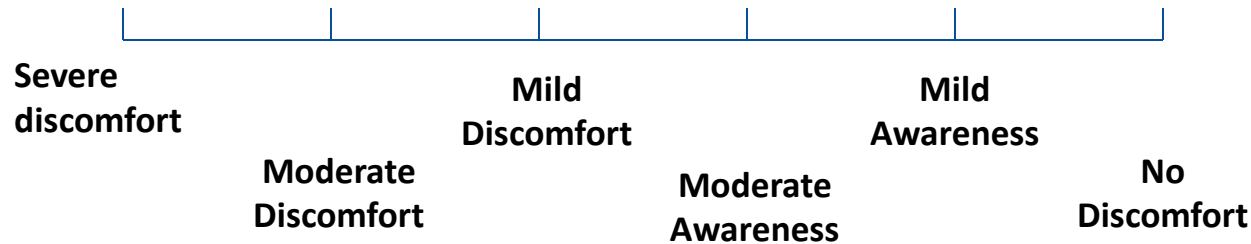
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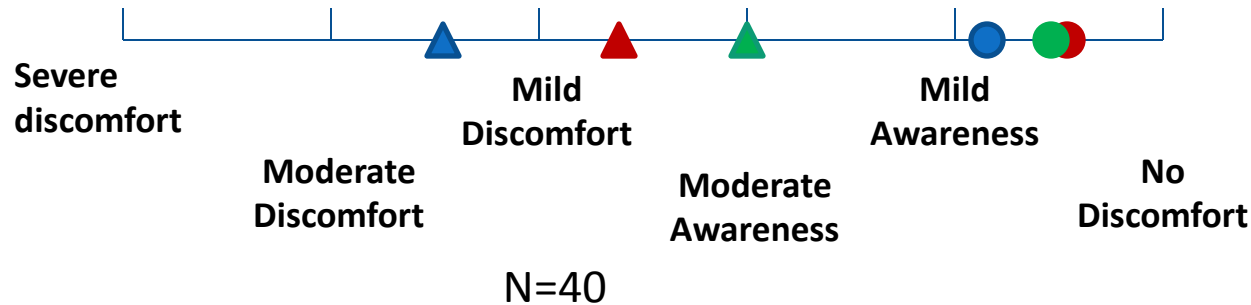


Anchored Comfort Scales



Dumbleton K, Simpson T, Sorbara L, et al. Ocular Comfort Measurements of Neophyte Contact Lens Wearers. IOVS 1996; 37(3):S72

Anchored Comfort Scales



▲ Rigid Lens at 3 min. (Boston 7)

▲ Rigid Lens at 60 min. (Boston 7)

▲ Rigid Lens at 240 min. (Boston 7)

● Soft Lens at 3 min (polymacon)

● Soft Lens at 60 min (polymacon)

● Soft Lens at 240 min (polymacon)

How have we been measuring comfort and are there better ways?

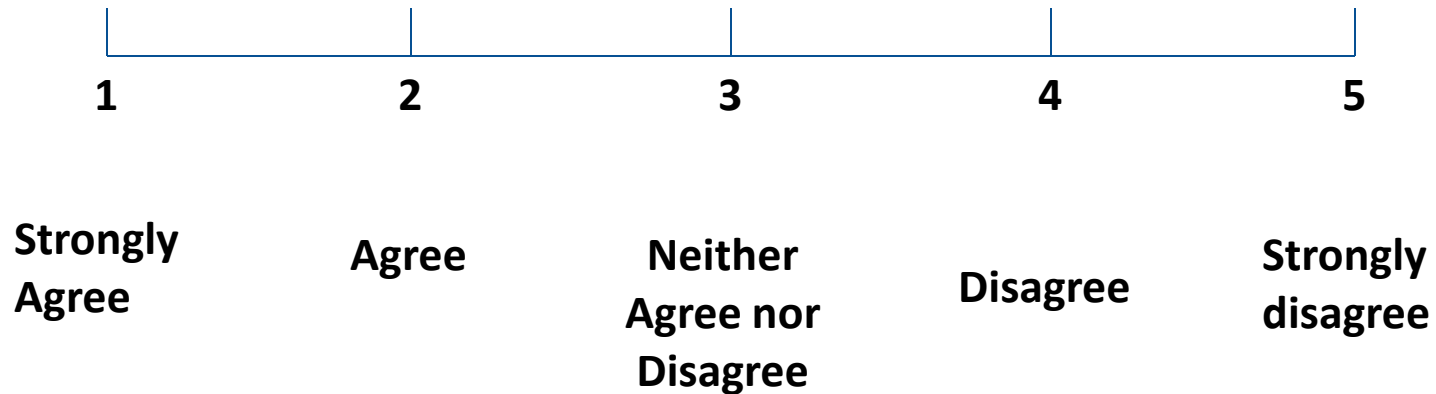
- Comfort Scales
 - Simple 0-5, 0-50, 0-100
 - Anchored with intermediate points defined
- Multiple Scales
 - Scales to measure a variety of comfort Attributes

Use of Likert Scales

- Measures of responses to specific statements.
- Able to discriminate specific responses.
- Used to understand comfort and other lens wear responses over time.
- Examples
 - “My lenses feel comfortable all day.”
 - “My lenses are moist feel moist from Insertion to Removal.”
 - “My lenses are comfortable at the end of the day.”
 - My lenses feel fresh

1. Likert R, A Technique for the Measurement of Attitudes. Archives of Psychology 1932; 140: 1-55
2. Garofalo R. Lemp J. Clinical Trial Experience with Opti-Free PureMoist MPDS. Contact Lens Spectrum Sept 2011;

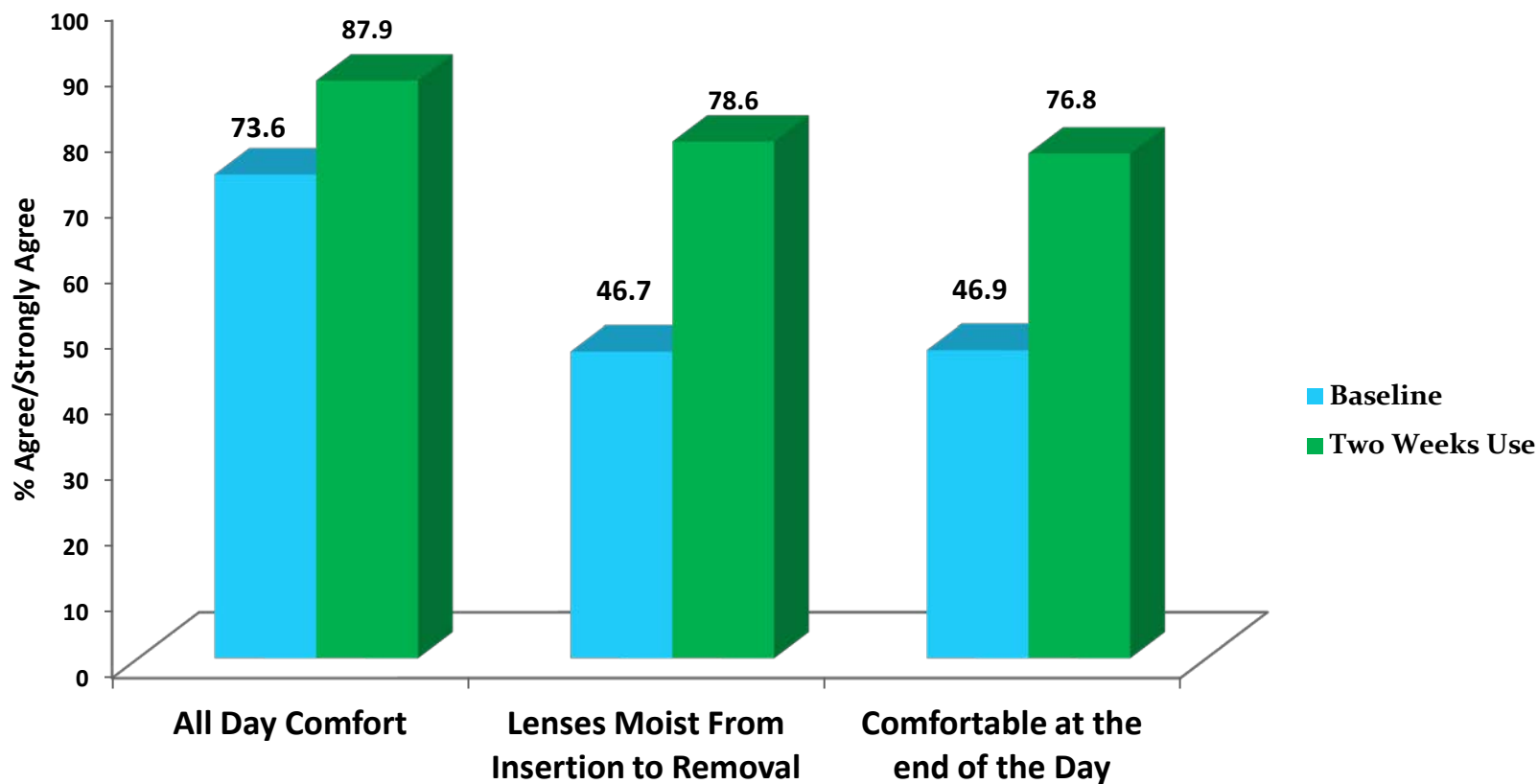
Likert Measurement Scale



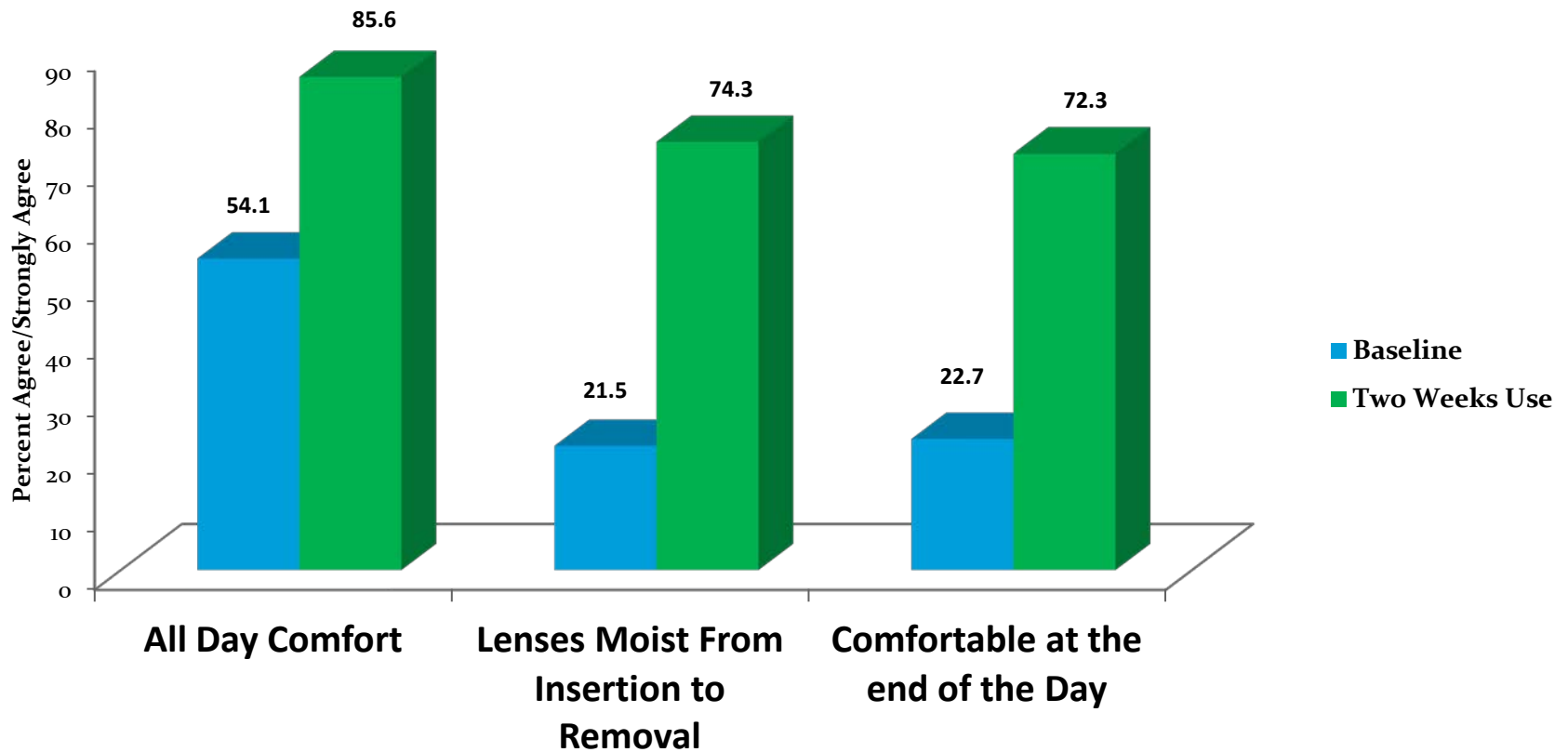
All Patients

Uncontrolled Product Use

N= 9,412

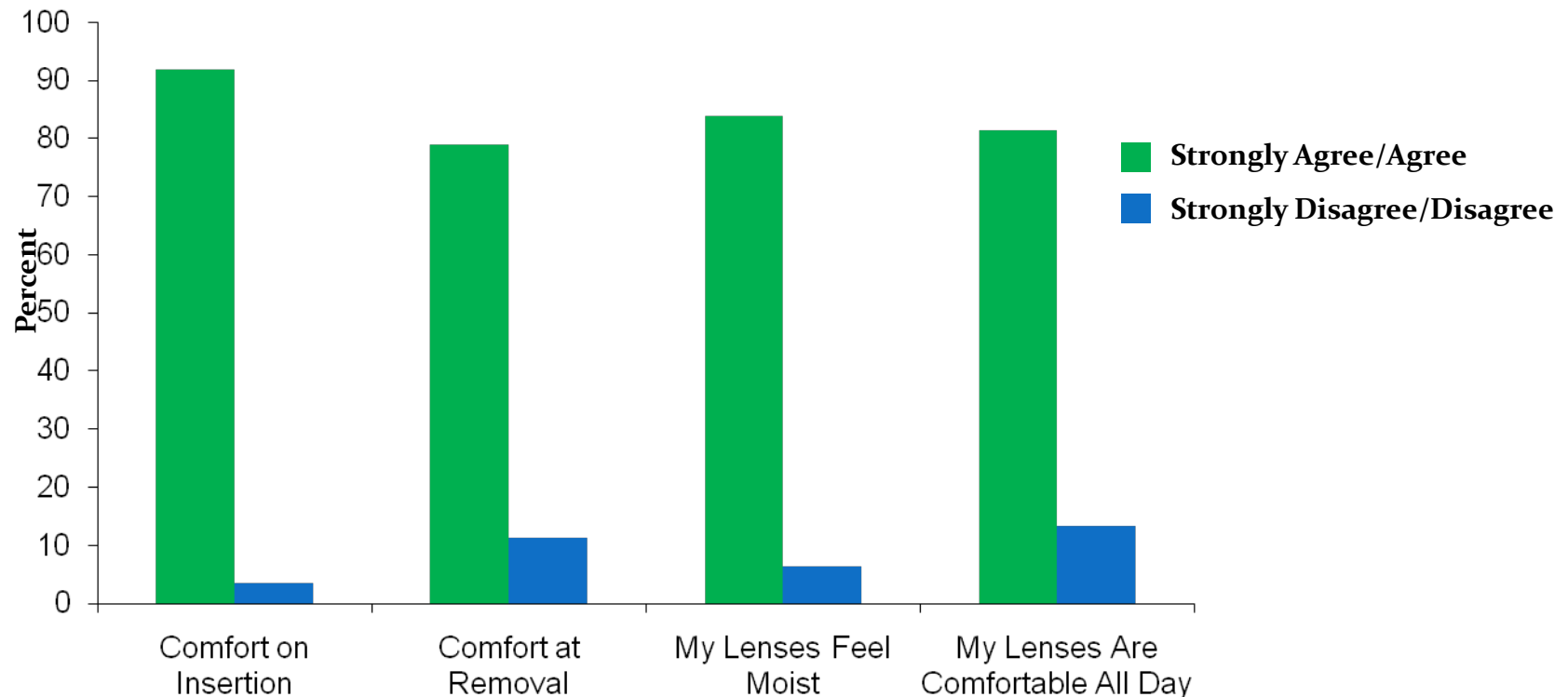


Symptomatic Uncontrolled Product Use N= 4,611



Asymptomatic SiHy Lens Wearers

Comfort From Insertion To Removal



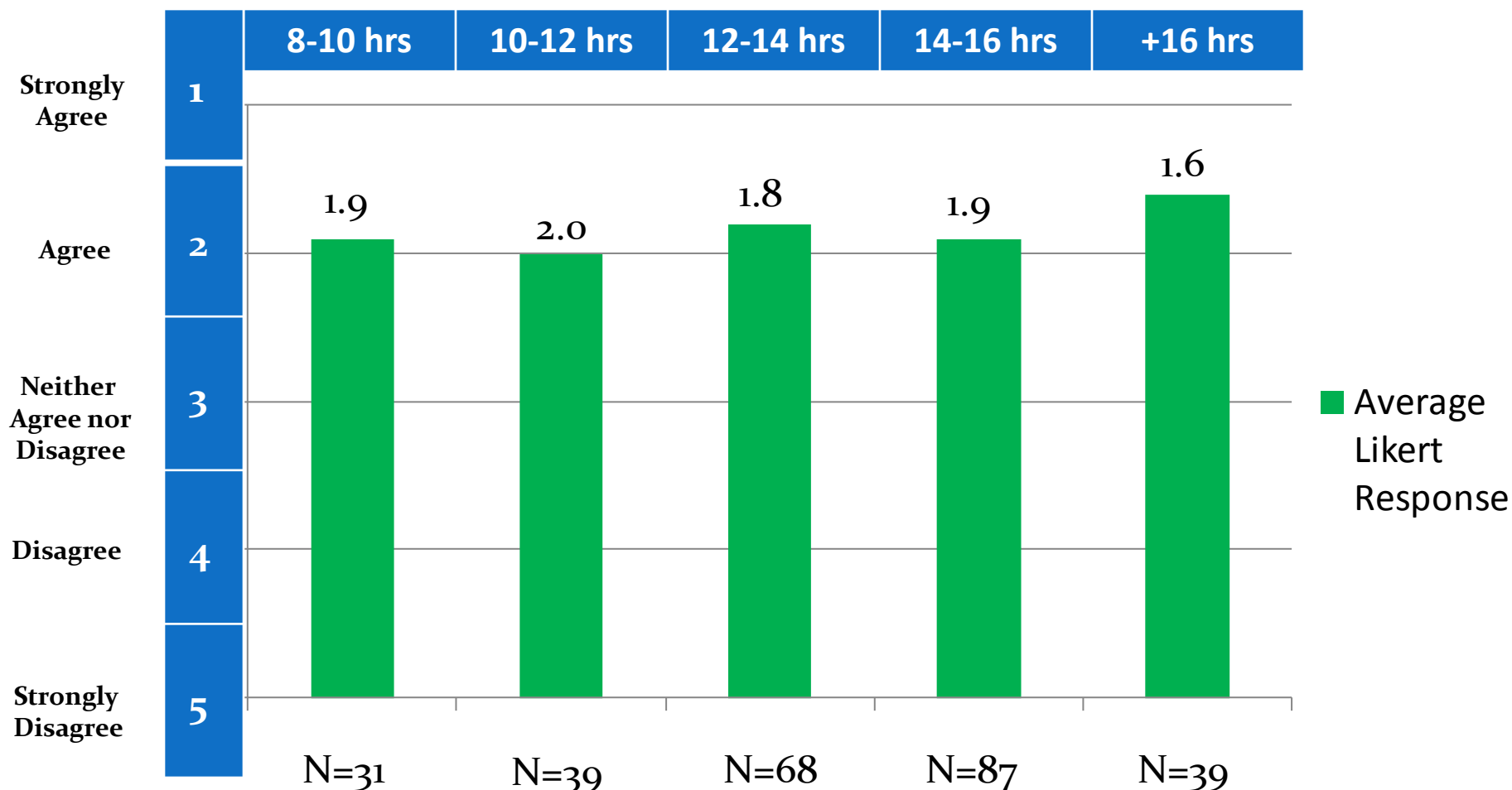
At the end of a 90 day clinical study when using test product
Patients undecided are not included and data may not equal 100%
Lenses replaced on manufacturer's recommended schedules

Statement	Asymptomatic Product A v. Control*	Symptomatic Product A v. Control*	Asymptomatic Product B v. Control*
	2003 N=352	2004 N=362	2010 N= 573
Enhances lens comfort/ comfortably wear lenses	—	+	+
Comfortable end of day /all day/long lasting	—	+	+
Feel moist	—	+	+
Gentle on eyes	+	+	+
Vision clear end of day	—	+	+
Insertion comfort			+
Removal comfort			+
Feel fresh			+
Like handling			+

— = No significant difference + = $p < 0.05$

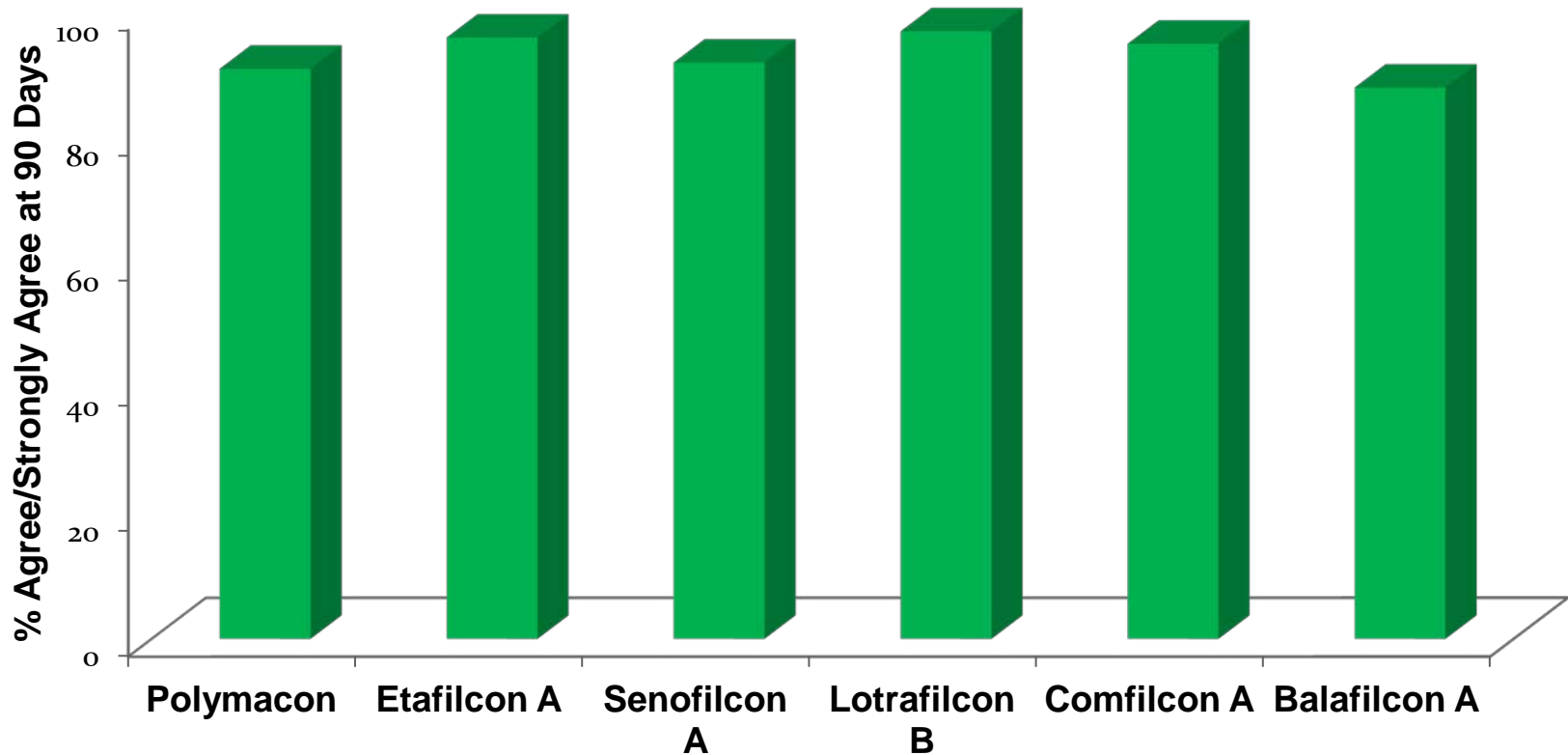
*Same control in all 3 studies

Lenses Feel Moist*



***Response to Likert item:**
“When I Use This Solution, My Lenses Feel Moist”
At the end of a 90 day clinical study when using Product B

Agreement by lens to Likert Statement: “I can Comfortably wear my lenses.” after 90 days





With better measurement systems and technologies, we are making progress providing better lens comfort.

Thank you