

# New connected home ovulation test provides big data on menstrual cycles

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## Background

- A new home ovulation test system, the Clearblue Connected Ovulation Test System enables women seeking to conceive the ability to monitor their fertility level via luteinising hormone and estrone-3-glucuronide measurement and obtain their results on an associated mobile phone app
- Users input cycle information in the app to guide testing
- Users' cycle and ovulation test data is stored anonymously in the cloud, so can be analysed for big data-based insights on menstrual cycles

## Methods

- Data from U.S women using the Connected Ovulation Test System (SPD Swiss Precision Diagnostics GmbH, Geneva) from 1<sup>st</sup> September 2017 to 21<sup>st</sup> May 2018 were analysed
- This consisted of 15,104 unique user IDs, 33,094 cycle records and 171,101 ovulation test records
- Data were cleaned to remove data from validation testing, leaving 32,540 cycle records
- Python 3 and the relevant libraries including 'pandas' have been used to develop the Jupyter Notebooks for this analysis
- Data were compared as shown in Figure 1

Figure 1: Data comparison



## Results

- When users input their cycle length at first use, 25.3% selected a 28-day cycle, with the next most common choices being 27 (10.8%), 26 (10.1%) and 30 (10.0%) days (Figure 2)
- Actual cycle length was normally distributed, with the most common length also being 28 days, but at a lower frequency of 11.8% (Figure 2)
- Very short cycles (<23 days) were seen in 5.3% of cases, and long cycles (>44 days) in 0.9%
- Of those who thought their cycle was 28 days long, 55% had their next cycle within 2 days of this estimate, but 10% fell outside the range of 23–44 days
- 52% of users with data from four cycles (n=534) had cycle lengths that varied by 5 or more days (Figure 3)

Figure 2: Comparison of user inputted cycle lengths compared to actual cycle lengths

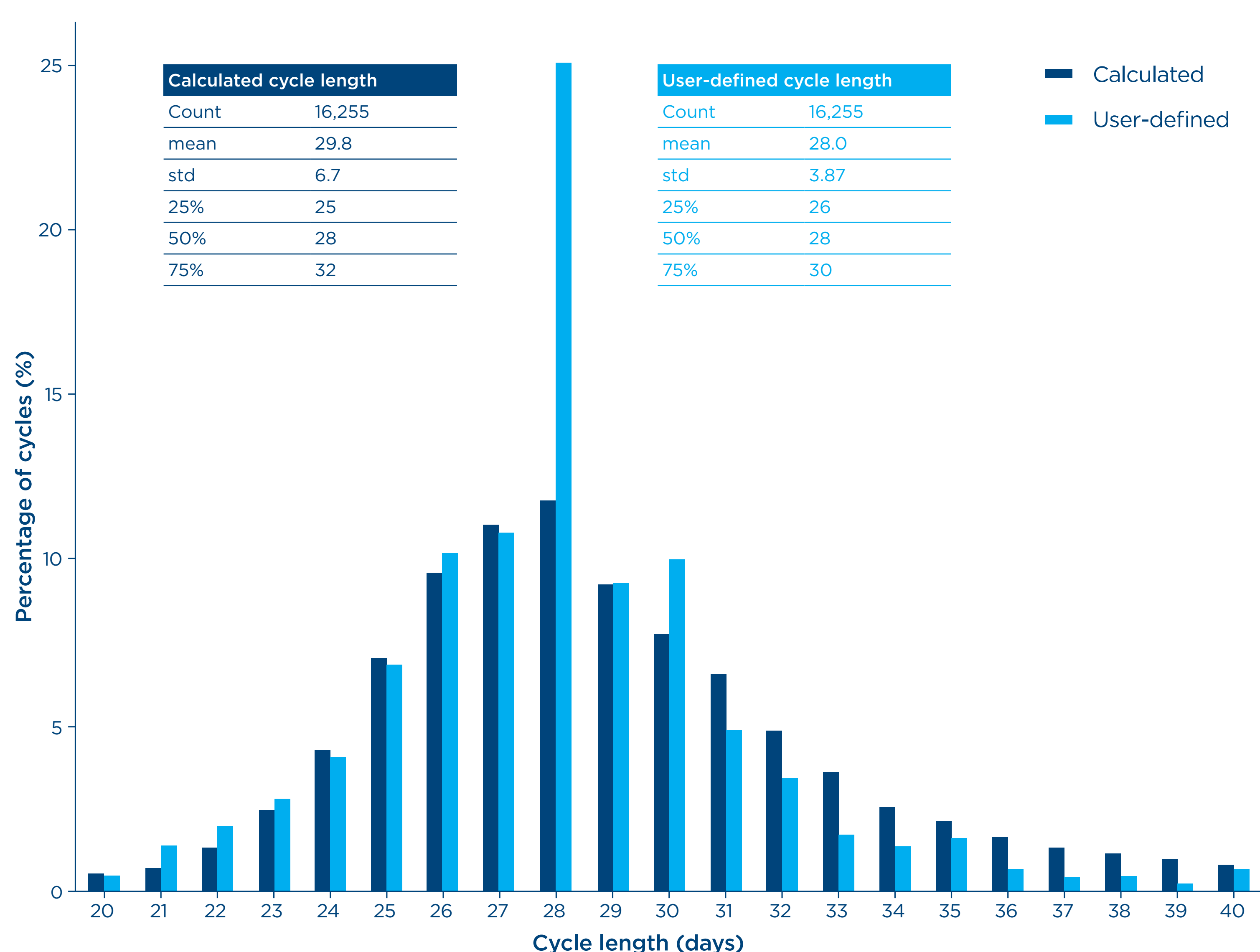
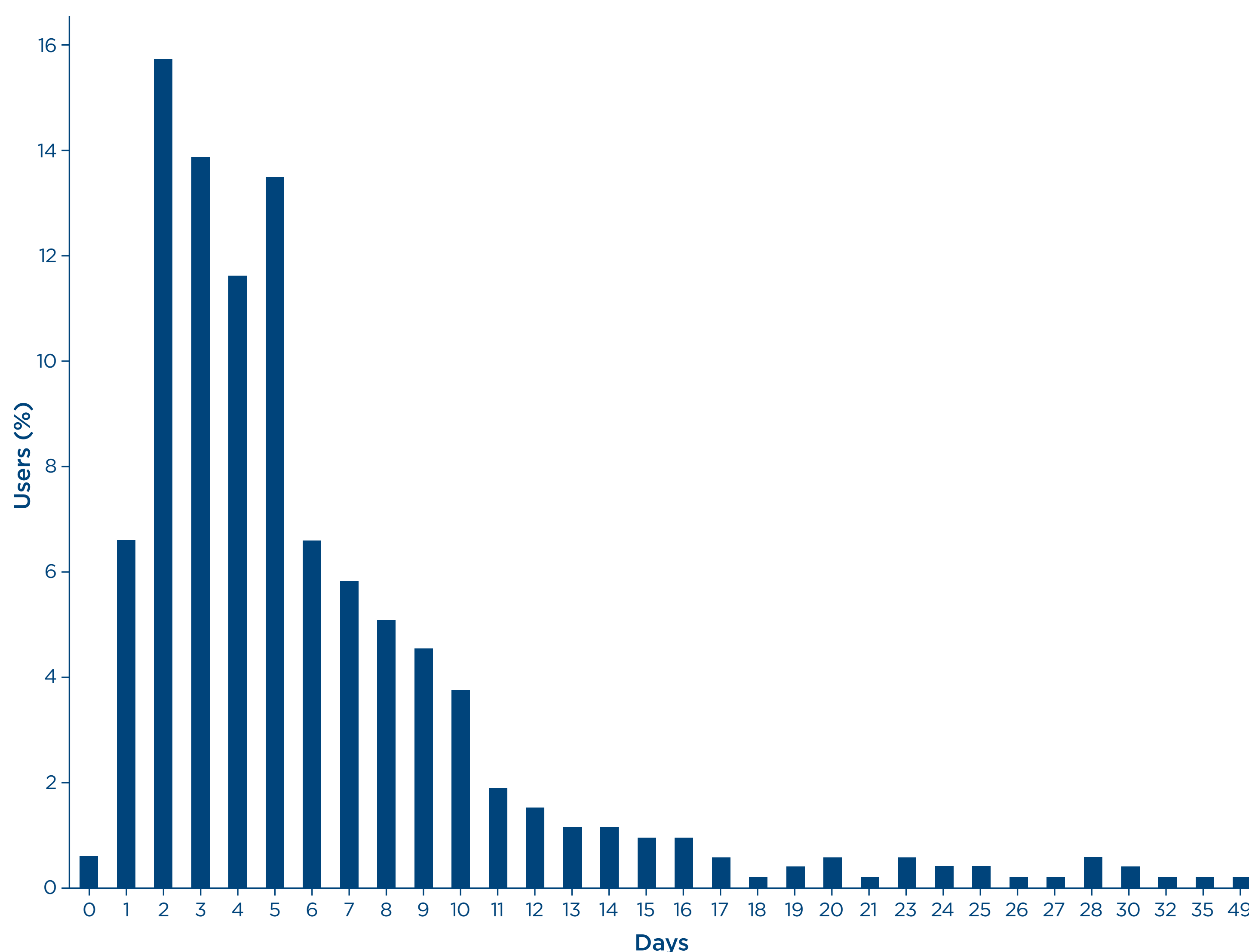


Figure 3: Variability in calculated cycle length across four cycles



## Conclusions

- In one of the biggest datasets ever examined on menstrual cycles in women seeking to conceive, the cycle length distribution and variability mirrors previous studies
- Some women appear to have poor knowledge of their cycles, selecting the textbook length of 28 days
- Cycles far shorter or longer than expected could be a result of the users' poor understanding of their cycle or cycle irregularity
- The Clearblue Connected Ovulation Test System therefore provides women with more insight into their cycles and enables them to accurately time intercourse when trying to conceive

## Declaration of interest

Authors are employees of SPD Development Company Ltd, a wholly owned subsidiary of SPD Swiss Precision Diagnostics GmbH, the manufacturer of Clearblue pregnancy and fertility tests. The study was funded by SPD Development Company Ltd. Poster intended for UK audience.