Growth charts have long been used worldwide to assess nutritional status. However, regular revisions were performed to account for secular changes in growth and to take advantage of modern statistical techniques. The American growth charts, including the previous 1978 National Center for Health Statistics (NCHS) and the current revised National Center for Disease Control reference growth charts (CDC 2000), which reflect the growth of children of the United States, are commonly used. Despite the common use of the CDC 2000 and WHO growth reference charts in some countries, others developed local growth reference charts more suitable to their population. In Saudi Arabia, growth charts from a representative sample of children have been published in the form of charts only. Therefore, the objective of this article is to report detailed percentile values of commonly used growth parameters, including LMS values, in children and adolescents from 5 to 18 years of age.

SUBJECTS AND METHODS
The methodology has been reported in a previous study. In brief, multistage probability sampling was used to se-

BACKGROUND: Information on LMS parameters and percentile reference for Saudi children and adolescents is not available.
OBJECTIVE: To report the L, M, and S parameters and percentile reference graphs for growth.
DESIGN: Field survey of a population-based sample of Saudi school-age children and adolescents (5-18 years of age).
SETTING: A stratified listing of the Saudi population.
SUBJECTS AND METHODS: Data from the national study of healthy children were reanalyzed using the Lambda-Mu-Sigma (LMS) methodology. The LMS parameters of percentiles for weight, height, and body mass index for age were calculated for children and adolescents from 5 to 18 years of age.
MAIN OUTCOME MEASURE: The main outcomes were the LMS parameters and percentiles of growth.
RESULTS: There were 19,299 and 9,827 (50.9%) were boys. The data for weight, height, and BMI for age for boys and girls are reported for the 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th, and 97th percentiles including LMS parameters for each percentile and age. Figures corresponding to each table are color coded (blue for boys and pink for girls).
CONCLUSIONS: This report provides a reference for growth and nutrition of Saudi school-age children and adolescents. The detailed LMS and percentile tables and graphs provide essential information for clinical assessment of nutritional status and growth in various clinical conditions and for research.
LIMITATIONS: This report does not reflect regional variations in growth.

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Growth reference for Saudi school-age children and adolescents: LMS parameters and percentiles
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lect a representative sample from each region of the country. Only healthy children were included. Weight is expressed in kilograms (kg) and length/height in centimeter (cm). As in previous analysis, the age was converted in Gregorian to facilitate comparison with growth charts of other populations.

**Statistical methods**

The L, M, and S method was used to synthesize the distribution of growth parameters as a function of age. The LMS parameters are the median (M), the generalized coefficient of variation (S), and the power in the Box-Cox transformation (L). The method models the entire distribution taking into account degree of skewness (L), central tendency (M), and dispersion (S). The parameters L, M and S were calculated according to the method of maximum penalized likelihood.10 Percentiles for all the anthropometric measures were calculated using the following formula.11

\[
P = M \left[ 1 + LSZ \right]^{1/L}, \text{ L ≠ 0}
\]

Where the L, M, and S are the values from the appropriate table corresponding to the age in years of the child. Z is the z-score that corresponds to the percentile.

For this study, we have calculated the 3rd, 5th, 10th, 25th, 50th, 75th, 90th, 95th and the 97th percentiles for weight, height, and added the 85th percentile for body mass index, commonly used to define overweight. The LMS Chart Maker Light 2.1 (Medical Research Council, London, UK) was used to process the data and Q-test was used to assess the goodness of fit of all L, M, and S models.13

This analysis is based on data from health profile of Saudi children and adolescents study funded and approved by King Abdul Aziz City for Science and Technology, Riyadh, Saudi Arabia.

**RESULTS**

The sample size consisted of 19,299 Saudi children and adolescents from 5 to 18 year of age. All were Saudi nationals and 9,827 (50.9 %) were boys. For boys, the L, M, and S parameters and percentiles for weight for age, height for age, and BMI for age are presented in the Tables 1 to 3, respectively, and the Figures 1 to 3 represent plots corresponding to the tables. Similarly, Tables 4 to 6 show L, M, and S parameters and percentiles for girls, including weight for age, height for age, and BMI for age. Figures 4 to 6 are plots of the data in Tables 4 to 6.

**DISCUSSION**

Worldwide variations of human growth are well known, suggesting that the use of growth references from another population is potentially risky.13 Previous studies from Saudi Arabia demonstrated marked differences in growth between Saudi children and their American counterparts.14-16 More recently reported differences between Saudi and both CDC 2000 and WHO growth charts confirm previous studies.17,18 The implication of these differences are considerable with the potential of overestimation of prevalence of short stature and malnutrition potentially resulting in unnecessary referrals and patient and parent anxiety.

The percentile system is commonly used in clinics and hospitals for the assessment of growth and nutrition in clinical setting.19 The percentile ranks of individuals define the nutritional and growth status in comparison with peers of the same age and gender. Children and adolescents are growing subjects and regular evaluation of their growth and nutritional sta-
The availability of L, M, and S parameters, percentiles tables, and reference charts for height for age, BMI for age and to lesser extent weight for age for school-age children and adolescents is important for research and health care.

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Table 1. L, M, and S parameters and percentiles for weight for age: boys 5 to 18 years.

| Age (y) | L       | M       | S       | 3rd    | 5th    | 10th   | 25th   | 50th   | 75th   | 90th   | 95th   | 97th   |
|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5       | -1.04677 | 16.65079| 0.1550993| 12.90855| 13.28112| 13.89993| 15.07723| 16.65079| 18.60172| 20.80742| 22.40426| 23.58309|
| 6       | -1.03259 | 18.64088| 0.1685233| 14.17041| 14.60824| 15.33896| 16.74133| 18.64088| 21.03668| 23.80084| 25.83963| 27.36547|
| 7       | -1.01548 | 20.66037| 0.1819188| 15.40283| 15.90975| 16.75961| 18.4042  | 20.66037| 23.55329| 26.95761| 29.51515| 31.45556|
| 8       | -0.99115 | 23.2016 | 0.1951612| 16.96528| 17.558  | 18.55585| 20.5014  | 23.2016 | 26.71622| 30.92749| 34.14503| 36.61717|
| 9       | -0.95247 | 26.06358| 0.2080576| 18.68911| 19.38161| 20.55156| 22.84711| 26.06358| 30.30098| 35.4506 | 39.43634| 42.52811|
| 10      | -0.89793 | 29.04166| 0.2201021| 20.42467| 21.22672| 22.58539| 25.26373| 29.04166| 34.05786| 40.20527| 44.99669| 48.73124|
| 11      | -0.82951 | 32.4206 | 0.2305578| 22.38467| 23.31419| 24.89148| 28.00907| 32.4206 | 38.29382| 45.50162| 51.1186 | 55.49237|
| 12      | -0.75313 | 36.42373| 0.2385633| 24.73617| 25.81763| 27.65393| 31.28576| 36.42373| 43.24885| 51.58274| 58.03479| 63.02903|
| 13      | -0.67871 | 40.85276| 0.2446715| 27.37162| 28.62171| 30.74394| 34.93716| 40.85276| 48.66688| 58.12203| 65.36768| 70.92835|
| 14      | -0.61957 | 45.73953| 0.2479675| 30.36456| 31.79524| 34.22245| 39.01013| 45.73953| 54.57247| 65.16076| 73.1944 | 79.31055|
| 15      | -0.58692 | 50.75983| 0.2490815| 33.55655| 35.16184| 37.88363| 43.24485| 50.75983| 60.58089| 72.28175| 81.10396| 87.78738|
| 16      | -0.58626 | 55.13887| 0.2485967| 36.47562| 38.21821| 41.17227| 46.98918| 55.13887| 65.78262| 78.45399| 88.00129| 95.23035|
| 17      | -0.60823 | 58.58773| 0.2471192| 38.90816| 40.74362| 43.85572| 49.98706| 58.58773| 69.84454| 83.28848| 93.45201| 101.1684|
| 18      | -0.64012 | 61.25766| 0.2451296| 40.89868| 42.79431| 46.00937| 52.34879| 61.25766| 72.95528| 86.9922 | 97.65765| 105.788 |
| Age (y) | L       | M       | S      | 3rd    | 5th    | 10th   | 25th   | 50th   | 75th   | 90th   | 95th   | 97th   |
|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5       | 1.484274 | 107.9784 | 5.40E-02 | 96.72755 | 98.17271 | 100.3781 | 104.0118 | 107.9784 | 111.8757 | 115.3279 | 117.3701 | 118.6872 |
| 6       | 1.139618 | 113.6109 | 5.22E-02 | 102.3724 | 103.7914 | 105.971 | 109.5992 | 113.6109 | 117.6028 | 121.1796 | 123.3131 | 124.6959 |
| 7       | 0.9419675 | 119.1193 | 5.06E-02 | 107.8147 | 109.2292 | 111.4093 | 115.0578 | 119.1193 | 123.1889 | 126.8584 | 129.0574 | 130.4867 |
| 8       | 0.9449131 | 124.4657 | 4.94E-02 | 112.9265 | 114.3706 | 116.5963 | 120.3204 | 124.4657 | 128.6186 | 132.3627 | 134.6062 | 136.0643 |
| 9       | 0.9488391 | 129.4396 | 4.91E-02 | 117.5055 | 118.9993 | 121.3014 | 124.9396 | 133.7335 | 137.6041 | 141.4302 | 139.9232 | 141.4302 |
| 10      | 0.6246465 | 133.9074 | 4.98E-02 | 121.5972 | 123.117 | 125.4709 | 129.4415 | 133.9074 | 138.4299 | 142.5483 | 145.0346 | 146.6579 |
| 11      | 9.42E-02 | 138.638 | 5.08E-02 | 125.9425 | 127.4751 | 129.8681 | 133.9576 | 138.638 | 143.4659 | 147.9409 | 150.6791 | 152.4818 |
| 12      | -7.27E-02 | 144.0198 | 5.19E-02 | 130.6711 | 132.2703 | 134.774 | 139.0717 | 144.0198 | 149.1572 | 153.9494 | 156.8961 | 158.8428 |
| 13      | 0.2517995 | 149.6053 | 5.24E-02 | 135.4007 | 137.1248 | 139.8117 | 144.3891 | 149.6053 | 154.9613 | 159.9034 | 162.9168 | 164.8965 |
| 14      | 0.9325199 | 155.8014 | 5.17E-02 | 140.697 | 142.5861 | 145.4981 | 150.3728 | 155.8014 | 161.2428 | 166.1509 | 169.0929 | 171.0054 |
| 15      | 1.843215 | 161.4386 | 4.97E-02 | 145.703 | 147.7542 | 150.8666 | 155.9498 | 161.4386 | 166.7743 | 171.4564 | 174.2076 | 175.9748 |
| 16      | 2.715764 | 165.1562 | 4.69E-02 | 149.2968 | 151.4456 | 154.6555 | 159.7773 | 165.1562 | 170.2502 | 174.6213 | 177.1498 | 178.7593 |
| 17      | 3.411383 | 167.4663 | 4.42E-02 | 151.8744 | 154.0466 | 157.2535 | 162.2847 | 167.4663 | 172.2878 | 176.3651 | 178.7004 | 180.1785 |
| 18      | 3.980551 | 168.8105 | 0.0417342 | 153.6481 | 155.8031 | 158.9572 | 163.8451 | 168.8105 | 173.3751 | 177.1976 | 179.3726 | 180.7441 |
Table 3. L, M, and S parameters and percentiles for body mass index for age: boys 5 to 18 years.

| Age (y) | L    | M    | S    | 3rd  | 5th  | 10th | 25th | 50th | 75th | 85th | 90th | 95th | 97th |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 5      | -1.1546 | 14.425 | 0.11715 | 11.85398 | 12.12153 | 12.56001 | 13.37456 | 14.42514 | 15.67127 | 16.44123 | 17.01084 | 17.93816 | 18.60128 |
| 6      | -1.1749 | 14.535 | 0.12861 | 11.74748 | 12.03238 | 12.50179 | 13.38225 | 14.53462 | 15.92714 | 16.80206 | 17.45674 | 18.53642 | 19.31935 |
| 7      | -1.1943 | 14.712 | 0.13997 | 11.70181 | 12.00415 | 12.50487 | 13.45289 | 14.71178 | 16.26175 | 17.25246 | 18.00262 | 19.25692 | 20.18026 |
| 8      | -1.2098 | 15.083 | 0.15111 | 11.81397 | 12.13688 | 12.67425 | 13.70075 | 14.71178 | 16.81615 | 17.9431 | 18.80676 | 20.27145 | 21.36678 |
| 9      | -1.2071 | 15.628 | 0.16196 | 12.0571  | 12.40471 | 12.98559 | 14.10385 | 15.62799 | 17.57034 | 18.85257 | 19.84589 | 21.55233 | 22.84696 |
| 10     | -1.1782 | 16.265 | 0.17227 | 12.36124 | 12.7369  | 13.36675 | 14.5866  | 16.26476 | 18.42953 | 19.87483 | 21.00345 | 22.96081 | 24.46162 |
| 11     | -1.1235 | 16.946 | 0.18163 | 12.69091 | 13.09729 | 13.78019 | 15.10806 | 16.94554 | 19.33282 | 20.93661 | 22.1942  | 24.38563 | 26.07443 |
| 12     | -1.0488 | 17.642 | 0.18983 | 13.0272 | 13.46638 | 14.20533 | 15.64509 | 17.6423  | 20.4247  | 21.9916  | 23.36342 | 25.75361 | 27.59449 |
| 13     | -0.9647 | 18.314 | 0.1968  | 13.3455 | 13.81801 | 14.61342 | 16.1639  | 18.31431 | 21.10948 | 22.98428 | 24.45111 | 26.99756 | 28.94971 |
| 14     | -0.8892 | 18.98  | 0.20253 | 13.67167 | 14.1767  | 15.02697 | 16.68413 | 18.97991 | 21.95556 | 23.94398 | 25.49473 | 28.17519 | 30.21912 |
| 15     | -0.8478 | 19.666 | 0.20714 | 14.04488 | 14.57897 | 15.47866 | 17.23341 | 19.66593 | 22.81892 | 24.92463 | 26.56565 | 29.39888 | 31.55593 |
| 16     | -0.8615 | 20.334 | 0.21081 | 14.45751 | 15.01265 | 15.94931 | 17.78165 | 20.33412 | 23.66469 | 25.90323 | 27.65583 | 30.69856 | 33.02959 |
| 17     | -0.9132 | 20.943 | 0.21387 | 14.86774 | 15.43648 | 16.39831 | 18.28857 | 20.94259 | 24.4459  | 26.82817 | 28.70968 | 32.01193 | 34.57371 |
| 18     | -0.9786 | 21.486 | 0.21658 | 15.25003 | 15.82811 | 16.80817 | 18.74401 | 21.4863  | 25.15499 | 27.68465 | 29.704  | 33.29661 | 36.1284 |
### Table 4. L, M, and S parameters and percentiles for weight for age: girls 5 to 18 years.

| Age (y) | L    | M      | S    | 3<sup>rd</sup> | 5<sup>th</sup> | 10<sup>th</sup> | 25<sup>th</sup> | 50<sup>th</sup> | 75<sup>th</sup> | 90<sup>th</sup> | 95<sup>th</sup> | 97<sup>th</sup> |
|---------|------|--------|------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| 5       | -0.938951 | 16.42919 | 0.1685386 | 12.4482 | 12.84134 | 13.49605 | 14.74714 | 16.42919 | 18.52782 | 20.9147 | 22.65023 | 23.93477 |
| 6       | 0.9157015 | 18.45433 | 0.178501 | 13.77099 | 14.2287 | 14.99332 | 16.46255 | 18.45433 | 20.96522 | 23.85503 | 25.97861 | 27.56234 |
| 7       | 0.8899531 | 20.6649 | 0.1893735 | 15.16592 | 15.69748 | 16.58836 | 18.31021 | 20.6649 | 23.66574 | 27.16288 | 29.76165 | 31.71543 |
| 8       | 0.8623634 | 23.17324 | 0.1999672 | 17.34735 | 18.38368 | 20.39738 | 22.72062 | 25.97128 | 30.18894 | 35.205 | 39 | 41.88993 |
| 9       | 0.8322223 | 25.97128 | 0.2097031 | 19.17783 | 20.37801 | 22.72062 | 25.97128 | 30.18894 | 35.205 | 39 | 41.88993 |
| 10      | 0.7994724 | 29.38699 | 0.2178778 | 21.44358 | 22.84008 | 25.57478 | 29.38699 | 34.35965 | 40.30696 | 44.82735 | 48.28041 |
| 11      | 0.7663324 | 33.57265 | 0.2237808 | 24.27543 | 25.90588 | 29.10424 | 33.57265 | 45.16304 | 53.27594 | 59.44133 | 64.14745 |
| 12      | 0.7413344 | 38.38703 | 0.2270551 | 26.48859 | 27.60592 | 29.49531 | 38.38703 | 45.16304 | 53.27594 | 59.44133 | 64.14745 |
| 13      | -0.731925 | 43.22614 | 0.2279888 | 29.77024 | 31.03381 | 33.17061 | 43.22614 | 50.88586 | 60.05038 | 67.00912 | 72.31693 |
| 14      | 0.7383584 | 47.25764 | 0.2272233 | 32.59572 | 33.97248 | 36.30124 | 47.25764 | 55.60431 | 65.59375 | 73.18195 | 78.97207 |
| 15      | 0.7550535 | 50.08248 | 0.2255488 | 34.66291 | 36.11118 | 38.55988 | 43.36541 | 50.08248 | 58.86646 | 69.39174 | 77.39851 | 83.51566 |
| 16      | -0.777939 | 52.04097 | 0.2265533 | 36.16599 | 37.65651 | 40.17663 | 45.12304 | 52.04097 | 61.09903 | 71.97591 | 80.2705 | 86.62072 |
| 17      | -0.80327 | 53.22288 | 0.2218783 | 37.13643 | 38.64573 | 41.19784 | 46.20867 | 53.22288 | 62.42283 | 73.50063 | 81.97466 | 88.47912 |
| 18      | -0.8281887 | 53.68508 | 0.2202955 | 37.59686 | 39.10506 | 41.65562 | 46.66542 | 53.68508 | 62.90914 | 74.06828 | 82.59687 | 89.17638 |
| Age (y) | L     | M     | S       | 3rd | 5th | 10th | 25th | 50th | 75th | 90th | 95th | 97th |
|---------|-------|-------|---------|-----|-----|------|------|------|------|------|------|------|
| 5       | 0.9887214 | 107.8352 | 5.39E-02 | 96.89977 | 98.27086 | 100.3825 | 103.912 | 107.8352 | 111.7599 | 115.2937 | 117.4091 | 118.7831 |
| 6       | 1.021588 | 113.0171 | 5.28E-02 | 101.7718 | 103.1839 | 105.3575 | 108.9872 | 113.0171 | 117.0439 | 120.6655 | 122.8318 | 124.2382 |
| 7       | 1.047814 | 118.522 | 0.051654 | 106.9798 | 108.4309 | 110.6634 | 114.3892 | 118.522 | 122.6479 | 126.3557 | 128.5722 | 130.0106 |
| 8       | 1.046376 | 123.8421 | 5.05E-02 | 112.0533 | 113.5352 | 115.8153 | 119.6207 | 123.8421 | 128.0569 | 131.8449 | 134.1094 | 135.5791 |
| 9       | 1.01275  | 129.1633 | 4.94E-02 | 117.1632 | 118.6694 | 120.9882 | 124.8615 | 129.1633 | 133.4632 | 137.3318 | 139.6463 | 141.1491 |
| 10      | 0.9565817 | 134.6863 | 4.82E-02 | 122.4892 | 124.0165 | 126.3698 | 130.3064 | 134.6863 | 139.0724 | 143.0252 | 145.393 | 146.9317 |
| 11      | 0.8806756 | 140.31  | 0.0471158 | 127.9437 | 129.4875 | 131.8689 | 135.8596 | 140.31  | 144.7774 | 148.8122 | 151.2332 | 152.8079 |
| 12      | 0.7635555 | 145.5699 | 4.60E-02 | 133.1145 | 134.6625 | 137.0543 | 141.0729 | 145.5699 | 150.0999 | 154.2049 | 156.741 | 158.2826 |
| 13      | 0.5740123 | 149.8175 | 0.0449087 | 137.392 | 138.9255 | 141.3011 | 145.3088 | 149.8175 | 154.3848 | 158.5453 | 161.0578 | 162.6984 |
| 14      | 0.286931 | 152.6869 | 4.41E-02 | 140.3951 | 141.8969 | 144.2317 | 148.1941 | 152.6869 | 157.2761 | 161.4898 | 164.0497 | 165.7275 |
| 15      | 0.1007422 | 154.3053 | 4.37E-02 | 142.1866 | 143.6478 | 145.93  | 149.8333 | 154.3053 | 158.9247 | 163.2127 | 165.8397 | 167.5707 |
| 16      | 0.5813157 | 155.1001 | 4.37E-02 | 143.1323 | 144.5521 | 146.7822 | 150.632 | 155.1001 | 159.7814 | 164.1887 | 166.919 | 168.7308 |
| 17      | -1.140942 | 155.5257 | 4.42E-02 | 143.6594 | 145.041 | 147.2248 | 151.0356 | 155.5257 | 160.3117 | 164.8976 | 167.7792 | 169.7091 |
| 18      | -1.765896 | 155.8763 | 4.49E-02 | 144.071 | 145.417 | 147.5594 | 151.3422 | 155.8763 | 160.8071 | 165.6338 | 168.7209 | 170.813 |
Table 6. L, M, and S parameters and percentiles for body mass index for age: girls 5 to 18 years.

| Age (y) | L       | M       | S       | 3rd    | 5th    | 10th   | 25th   | 50th   | 75th   | 85th   | 90th   | 95th   | 97th   |
|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5       | 14.32989| 0.1244782| 11.68381| 11.95329| 12.39768| 13.23284| 14.32989| 15.66306| 16.50564| 17.13892| 18.18902| 18.95529|        |
| 6       | 14.48028| 0.1335916| 11.64918| 11.93405| 12.40551| 13.29727| 14.48028| 15.93621| 16.86706| 17.57226| 18.75246| 19.62239|        |
| 7       | 14.74155| 0.1436224| 11.68709| 11.99053| 12.4946  | 13.45457| 14.74155| 16.34713| 17.86706| 18.18098| 19.52405| 20.52522|        |
| 8       | 15.17908| 0.1536925| 11.85864| 12.18451| 12.72778| 13.76909| 15.17908| 17.6683 | 18.97423| 20.56485| 21.72278|            |
| 9       | 15.69607| 0.1634513| 12.08774| 12.43804| 13.02391| 14.15329| 16.35505| 18.53366| 21.12348| 23.09243| 24.60179|            |
| 10      | 16.35505| 0.1724243| 12.42587| 12.80402| 13.43804| 14.66594| 16.35505| 18.53366| 19.98798| 21.12348| 23.09243| 24.60179|        |
| 11      | 17.17908| 0.1801299| 12.89472| 13.30453| 13.99292| 15.33042| 17.17908| 19.57733| 21.12348| 22.44677| 24.64075| 26.32944|        |
| 12      | 18.14618| 0.186309  | 13.48377| 13.92795| 14.67501| 16.12693| 18.14618| 20.77105| 22.53679| 26.38227| 28.20093|        |
| 13      | 19.2067 | 0.1910618 | 14.15941| 14.6389  | 15.44607| 17.02012| 19.2067 | 22.05912| 23.98107| 25.49064| 28.12516| 30.158  |        |
| 14      | 20.172  | 0.1946503 | 14.78322| 15.29402| 16.15452| 17.83455| 20.172  | 23.22719| 25.28849| 26.90866| 29.73912| 31.92471|        |
| 15      | 20.89756| 0.1974603 | 15.24643| 15.78093| 16.68194| 18.44307| 20.89756| 24.11151| 26.28365| 27.99302| 30.98236| 33.29374|        |
| 16      | 21.50933| 0.1999027 | 15.63638| 16.1905  | 17.12522| 18.95463| 21.50933| 24.86311| 27.13513| 28.92606| 32.06425| 34.49603|        |
| 17      | 21.91292| 0.2022514 | 15.87659| 16.44464| 17.40358| 19.28929| 21.91292| 25.37526| 27.72699| 29.58424| 32.84599| 35.37991|        |
| 18      | 22.05139| 0.2046199 | 15.92218| 16.49753| 17.4695 | 19.37684| 22.05139| 25.58162| 27.98535| 29.88696| 33.23357| 35.83947|        |