Maximum apparent temperature is associated with lower birth weight in a population exposed to a constant high ambient temperature in Piura, Peru

La temperatura máxima aparente se asocia con un menor peso al nacer, en una población expuesta a una temperatura ambiente alta y constante en Piura, Perú

Statistical power calculation for linear regression

Model 1:

```
. regress pesorn i.ctimext2 edad_ma i.work i.educ2 imec_ma i.preecl i.diab i.smoke i.sexorn egrn_fur_2, robust
Linear regression
Number of obs = 15,287
F(15, 15271) = 612.34
Prob > F = 0.0000
R-squared = 0.3794
Root MSE = 446.69

. power rsquared 0.3794, n(15287) ntested(10)
Estimated power for multiple linear regression
F test for R2 testing all coefficients
H0: R2_T = 0 versus Ha: R2_T != 0

Study parameters:
alpha = 0.0500
N = 15,287
delta = 0.6113
R2_T = 0.3794
n tested = 10

Estimated power:
power = 1.0000
```

Model 2:

```
. regress pesorn i.ctimext12 edad_ma i.work i.educ2 imec_ma i.preecl i.diab i.smoke i.sexorn egrn_fur_2, robust
Linear regression
Number of obs = 15,287
F(15, 15271) = 614.65
Prob > F = 0.0000
R-squared = 0.3805
Root MSE = 446.26

. power rsquared 0.3805, n(15287) ntested(10)
Estimated power for multiple linear regression
F test for R2 testing all coefficients
H0: R2_T = 0 versus Ha: R2_T != 0

Study parameters:
alpha = 0.0500
N = 15,287
delta = 0.6142
R2_T = 0.3805
n tested = 10

Estimated power:
power = 1.0000
```
Model 3:

```
. regress pesorn i.ctmaxi2 edad_ma i.work i.educ2 inc_ma i.preec i.diab i.smoke i.sexorn egrn_fur_2, robust
Linear regression
Number of obs = 15,287
F(15, 15271) = 612.32
Prob > F = 0.0000
R-squared = 0.3792
Root MSE = 446.75
```

```
. power r_squared 0.3792, n(15287) ntested(10)
Estimated power for multiple linear regression F test for R^2 testing all coefficients
H0: R^2 = 0 versus Ha: R^2 != 0
Study parameters:
  alpha = 0.0500
  N = 15,287
  delta = 0.6108
  R^2 = 0.3792
  ntested = 10
Estimated power:
  power = 1.0000
```

Model 4:

```
. regress pesorn i.ctmaxi2 edad_ma i.work i.educ2 inc_ma i.preec i.diab i.smoke i.sexorn egrn_fur_2, robust
Linear regression
Number of obs = 15,287
F(15, 15271) = 607.85
Prob > F = 0.0000
R-squared = 0.3787
Root MSE = 446.93
```

```
. power r_squared 0.3787, n(15287) ntested(10)
Estimated power for multiple linear regression F test for R^2 testing all coefficients
H0: R^2 = 0 versus Ha: R^2 != 0
Study parameters:
  alpha = 0.0500
  N = 15,287
  delta = 0.6095
  R^2 = 0.3787
  ntested = 10
Estimated power:
  power = 1.0000
```
Supplementary Material 2.
Regression models assumptions evaluation
Linear regression of for complete pregnancy:
Normal distribution of residuals for whole pregnancy model

We can say that residuals follow a normal distribution although a slight deviation can be seen in the tails of the distribution, but considering the number of observations, this is not an issue.

Heteroskedasticity

Linear regression of for first trimester pregnancy:
Normal distribution of residuals for first trimester pregnancy model

We see that residuals are not homogenously distributed across the predicted values. That is why we decided to opt for a robust linear regression.
Linear regression of second trimester pregnancy:
Normal distribution of residuals for second trimester pregnancy model

Heteroskedasticity

Linear regression of third trimester pregnancy:
Normal distribution of residuals for third trimester pregnancy model

Heteroskedasticity
### Adjusted linear regression analysis between birth weight and HImax

<table>
<thead>
<tr>
<th>Variable</th>
<th>Entire pregnancy</th>
<th>Third trimester</th>
<th>Second trimester</th>
<th>First trimester</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>β-coeff</td>
<td>95%CI</td>
<td>p</td>
<td>β-coeff</td>
</tr>
<tr>
<td>HImax</td>
<td></td>
<td></td>
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<tr>
<td>Q2</td>
<td>-0.22</td>
<td>-2.47, 1.04</td>
<td>0.767</td>
<td>-1.24</td>
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<tr>
<td>Q3</td>
<td>-0.29</td>
<td>-0.59, -0.06</td>
<td>0.006</td>
<td>-0.29</td>
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<tr>
<td>Q4</td>
<td>-0.20</td>
<td>-0.28, -0.13</td>
<td>&lt;0.005</td>
<td>-0.20</td>
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<tr>
<td>P95</td>
<td>-0.21</td>
<td>-0.53, -0.01</td>
<td>0.20</td>
<td>-0.21</td>
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<tr>
<td>Mother age</td>
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<tr>
<td></td>
<td>0.35</td>
<td>0.21, 0.54</td>
<td>&lt;0.001</td>
<td>0.35</td>
</tr>
<tr>
<td>Work status</td>
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<tr>
<td>Employed</td>
<td>-0.18</td>
<td>-0.56, 0.22</td>
<td>0.330</td>
<td>-0.18</td>
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<tr>
<td>Study level</td>
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<tr>
<td>Elementary</td>
<td>0.20</td>
<td>0.18, 0.22</td>
<td>0.045</td>
<td>0.19</td>
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<tr>
<td>Secondary</td>
<td>0.92</td>
<td>0.34, 0.50</td>
<td>0.002</td>
<td>0.92</td>
</tr>
<tr>
<td>Higher education</td>
<td>1.29</td>
<td>1.05, 1.52</td>
<td>&lt;0.001</td>
<td>1.29</td>
</tr>
<tr>
<td>Pregestational BMI</td>
<td>15.63</td>
<td>13.85, 17.40</td>
<td>&lt;0.001</td>
<td>15.82</td>
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<td>Preeclampsia</td>
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<tr>
<td>Yes</td>
<td>-1.64</td>
<td>-1.94, -1.35</td>
<td>&lt;0.001</td>
<td>-1.73</td>
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<td>Gestational diabetes</td>
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<tr>
<td>Yes</td>
<td>3.46</td>
<td>18.7, 30.5</td>
<td>&lt;0.001</td>
<td>3.40</td>
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<td>Smoking</td>
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<tr>
<td>Yes</td>
<td>0.49</td>
<td>0.41, 0.57</td>
<td>&lt;0.001</td>
<td>0.48</td>
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<tr>
<td>Newborn sex</td>
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<tr>
<td>Feminine</td>
<td>0.83</td>
<td>0.99, 0.79</td>
<td>&lt;0.001</td>
<td>0.84</td>
</tr>
<tr>
<td>Gestational age at birth</td>
<td>164.33</td>
<td>160.25, 167.96</td>
<td>&lt;0.001</td>
<td>159.50</td>
</tr>
</tbody>
</table>

Linear regression model adjusted for maternal age, employment status, educational level, pregestational BMI, preeclampsia, gestational diabetes, smoking and sex of the newborn.

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