

## **Activity levels versus age for a small convenience sample of Micronesians on Pohnpei in the Federated States of Micronesia as measured by pedometer step counts**

An informal study of activity levels versus age was conducted on Pohnpei in the Federated States of Micronesia between February and June 2008. Existing small convenience samples formed the basis of this informal report. The intent of the report is to gather information that might be useful and informative to further more formal studies.

Between February and April of 2008 students in the MS 150 Statistics class were given pedometers provided by the FSM Department of Health. The students used these pedometers to gather their own daily step count information. Forty students reported their daily step counts. The students reported four to fifty-one days worth of data with an average of 16.78 days worth of data per student. The mean for these forty students was 5467 steps per day. Note that this study has five more students than an earlier report on this sample. The earlier report did not include students who were absent on the days when body composition measurements were taken.

During April 2008 thirty-six second grade students in one class each at two schools were given pedometers provided by the Imi Hale/Pacific Diabetes Education Program in Hawaii. The students reported one to ten days worth of data with an average of 5.11 days worth of data per student. The mean for these thirty-six second grade students was 5747 steps per day.

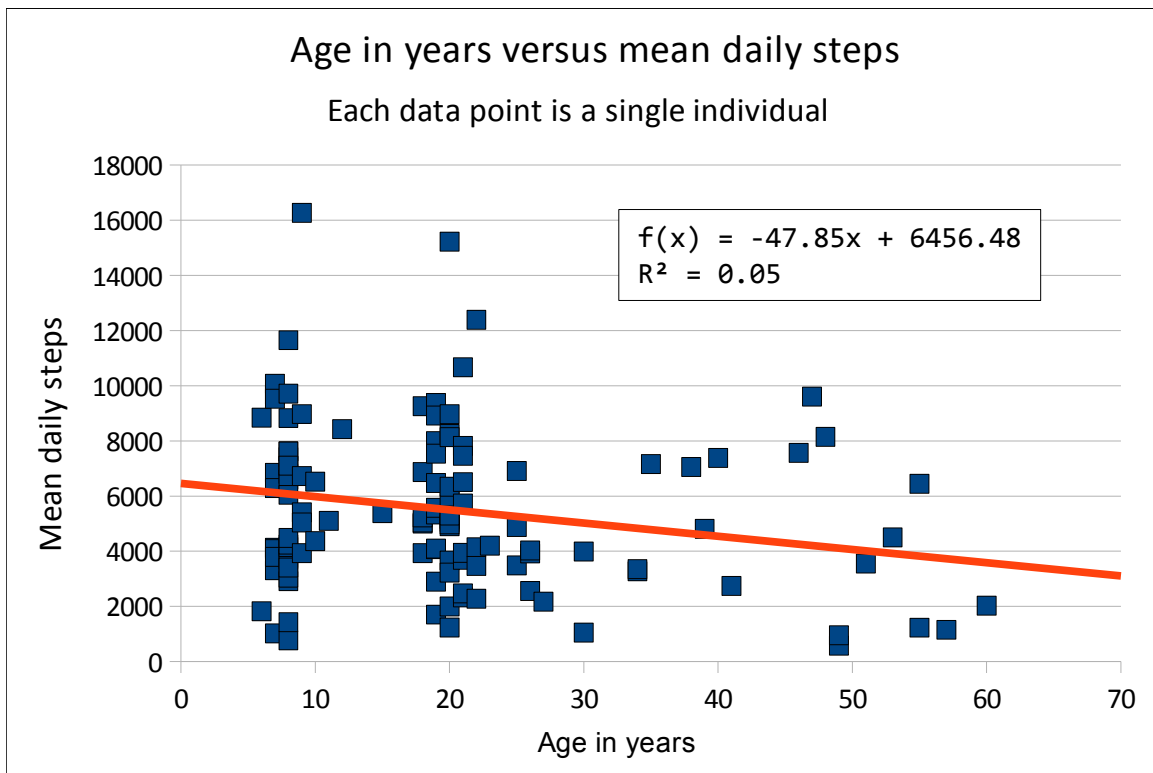
Students attending the MS 150 Statistics course during June 2008 were given three pedometers. The students were instructed to wear one, give the second to someone at least ten years younger, and give the third to someone at least ten years older. The students reported back data for thirty-seven individuals including themselves. Many of the students chose siblings, other relatives, or friends for the second and third pedometer. The measurements consisted of four to eight days worth of data with an average of 6.62 days worth of data per student. The mean daily steps for these forty-one individuals was 5053 steps per day.

For all of the above samples age data is known. The age of the individuals range from six to sixty years old with an average of 20.08 years old (standard deviation = 13.14).

The mean daily step counts range from 574 steps per day to 16269 steps per day with an average of 5496 steps per day (standard deviation = 2909).

### **Data Analysis**

A scatter plot of the above samples of age versus the individual daily mean steps is seen in illustration one.



*Illustration 1: Age versus mean daily steps*

The data shows a downward trend with age. The correlation coefficient  $r$  is  $-0.22$  ( $p$ -value, two-tailed =  $0.02$ ). Bearing in mind that the samples are convenience samples, the correlation is not random. The data suggests a decline of roughly fifty steps per year. The trend suggests a theoretical starting point of 6456 steps per day for the individuals in these samples.

The two distinct age "clumps" represent the second graders (around seven and eight years old) and the college students (around twenty years old). The bulk of the rest of the data comes from the work of the statistics students in June 2008.

## Conclusions

The rate of decline in activity levels as measured by pedometers is small, a drop of fifty steps per year. This is a very modest decline and probably not a cause for concern if the decline were to have started at activity levels above 10,000 steps per day.

The starting point, however, for this downward trend is projected to be 6456 steps per day. An active lifestyle is typically considered to incur 8000 or more mean steps per day. The starting point for the individuals in this study is well below that of an active lifestyle. 82% of the participants have a mean daily step count less than 8000, and the sample is biased towards younger participants in terms of age.

Knowing the issues that Micronesia faces in terms of obesity and obesity-related diseases, the overall low levels of activity across all age groups is a primary finding and principal concern raised by this data.

Secondarily, there is apparently a steady decline in those low mean step counts with age.

This data should be considered a call for a more careful and broader study of activity levels among Micronesians of all ages.

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