Writing a paper with R and Quarto 1.4 about municipality level correlation of night lights (by satellites) and poverty risk in Finland

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**Data availability statement:** The data that support the findings of this study are available from the National Institute of Health and Welfare ([www.thl.fi](https://thl.fi/fi/)) and Statistics Finland ([www.stat.fi](https://www.stat.fi/)). Restrictions apply to the availability of these data, which were used under license for this study. Inquiries about secure access to data should be directed to data permit authority Findata ([findata.fi/en](https://findata.fi/en/)).

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**Ethics approval statement:** The Research Ethics Committee of the Finnish Institute for Health and Welfare approved the study protocol (decision #10/2016§751).

**Patient consent statement:** Informed consent is not required for register-based studies in Finland.

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## Abstract

**Objectives:** Night lights have been used as a proxy measure for economic circumnstances. Let’s write a paper about it.

**Methods:** We drew colorful figures and studied correlations.

**Results:** Overall, there are 308 municipalities. Municipality with most cottages is Helsinki. The greatest number of catteges is in Kuopio, 10 496. P-values was 0·13.

**Conclusions:** No correlation found. Quarto 1.4, published 24 Jan 2024, seems like a big step.

**Keywords:** Satellites, holydays, psychiatry, epidemiology

## Introduction

But I must explain to you how all this mistaken idea of denouncing pleasure and praising pain was born and I will give you a complete account of the system, and expound the actual teachings of the great explorer of the truth, the master-builder of human happiness. No one rejects, dislikes, or avoids pleasure itself, because it is pleasure, but because those who do not know how to pursue pleasure rationally encounter consequences that are extremely painful. Nor again is there anyone who loves or pursues or desires to obtain pain of itself, because it is pain, but because occasionally circumstances occur in which toil and pain can procure him some great pleasure. To take a trivial example, which of us ever undertakes laborious physical exercise, except to obtain some advantage from it? But who has any right to find fault with a man who chooses to enjoy a pleasure that has no annoying consequences, or one who avoids a pain that produces no resultant pleasure. This is a 1914 translation by H. Rackham, <https://www.lipsum.com>.

Citation to an important paper.1

## Method

We used R with Quarto 1.4 to to do this. See: <https://quarto.org/docs/blog/posts/2024-01-24-1.4-release/>

### Analysis

We used average masked Visible Infrared Imaging Radiometer Suite (VIIRS) in 2022 by [Colorado School of Mines](https://eogdata.mines.edu/nighttime_light/), Statistics Finland data, accessed using library(pxweb), and municipality data, accessed using library(geofi).

## Results

Overall, there are 308 municipalities. Municipality with most cottages is Helsinki. The greatest number of catteges is in Kuopio, 10 496. P-values was 0·13.

See [Table 1](#tbl-mokit). See [Figure 1](#fig-nl) also. More in [Table S1](#supptbl-mokit).

The brightest municipalites are in [Table 2](#tbl-nl).

### Additional analyses

See [Figure S1](#suppfig-mp). See [Figure S2](#suppfig-cp).

## Discussion

We found no correlations but we drew colorful figures.

The main pro is easy editing.

* Minor changes in the analyses well be updated automatically.
* References to Tables and Figures. Custom Float Cross-Reference (1.4)
* Authors list

<https://quarto.org/docs/authoring/front-matter.html>

### Limitations

There are some painful steps in this workflow.

* Using Mac may be problematic (Quarto 1.3).
* Formatting docx is difficult. Landscape pages, complex tables, figure size, etc.
  + <https://github.com/kapsner/authors-block> for title page
  + Custom solution for landscape <https://stackoverflow.com/questions/73784720/changing-page-orientation-in-word-using-quarto>
  + you can use docx templates..

### Conclusions and future

Quarto 1.4, published 24 Jan 2024, brought ease to this workflow. It comes with manuscript projects, dashboards and Typst, among other things. It might turn out a big step, we well see.

[Typst](https://github.com/typst/typst) is a new open-source markup-based typesetting system that is designed to be as powerful as LaTeX while being much easier to learn and use.

Read more:

* <https://mine.quarto.pub/manuscripts-conf23/>
* <https://quarto.org/docs/manuscripts/authoring/rstudio.html>

## Conflict of Interest Statement

## Other stuff if not in the beginning

## References

1. Suokas K, Gutvilig M, Lumme S, Pirkola S, Hakulinen C. Enhancing the accuracy of register-based metrics: Comparing methods for handling overlapping psychiatric register entries in Finnish healthcare registries. doi:[10.1101/2023.12.07.23299655](https://doi.org/10.1101/2023.12.07.23299655)

## Tables

### [Table 1](#tbl-mokit). Municipalities with the highest number of cottages

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 1   | Top 10 | | | --- | --- | | Name | Cottages†, N | | Kuopio | 10 496 | | Mikkeli | 10 222 | | Parainen | 9 695 | | Savonlinna | 8 786 | | Hämeenlinna | 8 668 | | Lohja | 8 256 | | Kuusamo | 7 580 | | Kouvola | 7 544 | | Raasepori | 6 892 | | Salo | 6 431 | |

†All colors included.

### [Table 2](#tbl-nl). The top 12 brightest municipalities

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Table 2   | Name | Mean night light | | --- | --- | | Helsinki | 56 | | Kauniainen | 45 | | Maalahti | 42 | | Pietarsaari | 39 | | Vantaa | 36 | | Kemi | 34 | | Kerava | 30 | | Teuva | 29 | | Kaskinen | 28 | | Raisio | 27 | | Seinäjoki | 25 | | Järvenpää | 25 | |

## Figures

### [Figure 1](#fig-nl). Night lights in Finland in 2022

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| Figure 1 |

### [Figure 2](#fig-mp). Association of night lights and poverty

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| --- |
| Figure 2 |

## Supplementary Tables

### [Table S1](#supptbl-mokit) Municipalities with the lowest number of cottages

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Bottom 10 | | | --- | --- | | Name | Cottages†, N | | Kauniainen | 0 | | Kerava | 12 | | Kempele | 28 | | Harjavalta | 45 | | Raisio | 52 | | Nakkila | 57 | | Alavieska | 70 | | Maarianhamina - Mariehamn | 71 | | Oripää | 78 | | Aura | 84 |   Table S1 |

†All colors included.

## Supplementary Figures

### [Figure S1](#suppfig-mp). Association of number of cottages and night lights

|  |
| --- |
| Figure S1 |

### [Figure S2](#suppfig-cp). Association of number of cottages and poverty

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| Figure S2 |