Fraunhofer Institute Systems and Innovation Research

Torben Schubert
Ulrich Schmoch

email: torben.schubert@isi.fraunhofer.de

How Lazy Are University Professors Really: A not so Seriously Meant Note on Observations made during an Online-Inquiry

Abstract: Using data from a large survey of publicly funded German research institutes, we make some observations on the working morale of university professors. We noted that the share of tenured professors who answered the questionnaires very early or very late in the day was considerable. We regard this as evidence that German professors are not as inactive or as lazy as common prejudices seem to indicate.

1. Introduction

In Germany, a lively discussion is raging concerning the working morale of German university professors. The public especially seems to doubt that such a thing exists. Some say this is just another facet of a typical German envy-driven debate, while others regard it as justified and argue against professorial privileges, such as tenured positions. The most recent (and also extreme) peak of this long raging debate is a book written by two German authors (Kamenz and Wehrle, 2007), principally arguing that more than half of German professors are "inactive" while 5 out of 100 are *so lazy that they – according to law – would have to be dismissed*[1] (Wehrle, 2007).

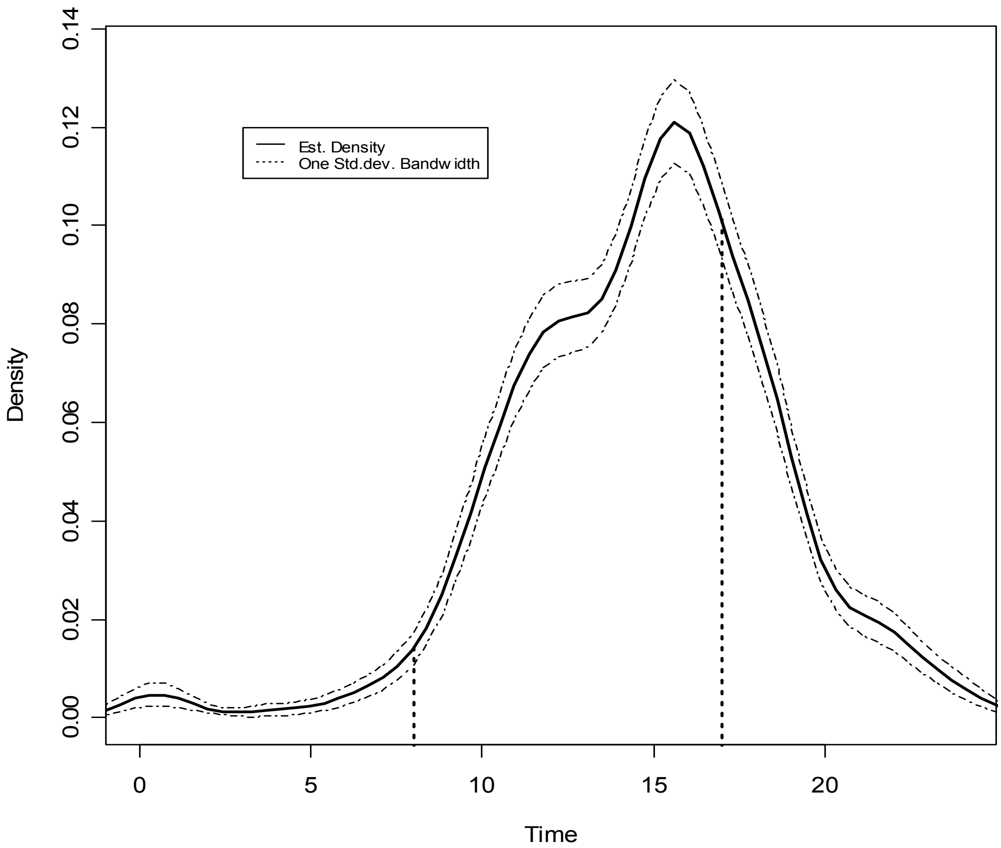
Because the empirical methodology underlying the analyses of the book written by Kamenz and Wehrle certainly owes more to populism than to sound empirical procedure,[2] we regard it as unfortunate that it has received great and overwhelmingly positive attention by almost all major magazines and newspapers in Germany (e.g. Zeit, Spiegel, Tagesspiegel). In fact, we think such work should not remain unanswered by the scientific community. In an on-line survey we made some surprising observations.

2. Evidence from a German Survey

Between February and March 2007, a large on-line survey concerning new modes of governance in the German public science sector was conducted, which was funded by the German Research Association (DFG). The main focus of this inquiry was the influence of new public management instruments on the scientific performance of publicly funded German research units. In total, 1,908 such institutes in the fields of astrophysics, nanotechnology, biotechnology and economics received a questionnaire. From these we have got 477 (exactly 25%) valid answers, of which 331 were from holders of university chairs. The remaining were non-university units, which we will disregard in this study.

However, apart from the answers given by the participants, the script routinely recorded the time needed to fill out the questionnaire, and of especial interest, the time at which it was sent off. Seemingly of no relevance for the questions of this census, we noticed relatively early that a significant share of questionnaires was filled out very early in the morning or very late in the evening. Taking only the questionnaires from university professors into account, the distribution of answers is given in the following figure[3]:

Figure 1: Kernel Density of Answer Times with Corresponding Bandwidth Intervals



Clearly, it can be seen that although the bulk of the probability mass lies between 8:00 am and 5:00 pm, a considerable share of answers was given outside that core time. Clearly, the area under the density curve is the cumulative density. Therefore, to get an estimate we used numerical integration (Simpson's procedure).[4] It then turned out that this estimated share respectively probability was over 31.6%. Between 7:00 pm and 8:00 am it was still 17.5%. And even for the span between 10:00 pm and 8:00 am, the estimated probability was no less than 6.3%. In fact, we received the latest (or earliest) answer at 3:45 am.

3. Conclusion

We already note in the title that this analysis should not be taken too seriously. In fact, there are many reasons for this. First, a late answer does not necessarily indicate that a professor is working hard. Maybe he answered at 3 in the morning because he could not sleep anymore (after having slept all day already). Mayber he had just stepped out of a bar. It may also be true that this was the time that he entered his (university) office after managing his (private) company (a common prejudice). On the contrary, an answer in the core time does not indicate at all that the participant does not work very hard. We do not know if he was still in the office at 12:00 pm.

However, ruling out unlikely explanations, we think that the response times indicate that a considerable number of German professors did not manage to answer the questionnaire during the core time. Thus, we think that German professors are far less lazy than cheap propaganda wants us to believe.

References

Kamenz, U. and Wehrle, M. (2007): Professor Untat: Was faul ist hinter den Kulissen, *Econ-Publishers*

Werle, K (2007): Die Hälfte ist untätig, *Manager Magazin*, **37 (3)**

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Footnotes

1. The passage in italics was literally translated by the authors.

2. Kamenz and Wehrle advertised in the paper that they were looking for professors willing to do consultancy. This job description said that the work would amount to about 2-3 days per week. Kamenz and Wehrle received 40 answers. Of course, there is strong bias in this "study", because no estimate on the subsample of professors not willing to participate in such activities is obtained.

3. We took the Gaussian kernel with bandwidth chosen by cross validation. In addition, we provided 1 standard deviation tolerance interval.

4. We show that the estimator is consistent. We do that in the form of a theorem.

Theorem (Consistency): Let $\widehat{f}$ be a consistent estimate of the density function then the integral over $\widehat{f}$ up to some $t_0 \in \mathbb{R}$ is a consistent estimate of the distribution function at t_0.

Proof: Let $\widehat{f}$ denote the kernel-density estimator. Since this is consistent, we have $\lim_{n\to\infty} P\left(\sup_{a\in\mathbb{R}} \left|\widehat{f}(a) - f(a)\right| > \delta\right) = 0$. Define $\delta = \varepsilon / \left(t_{i-1} - t_i\right)$. Now, consider the deviation of the estimated d.f. obtained by integration from the true at any t_0. The following statement is trivially true:

$$\left|\widehat{F}(t_0) - F(t_0)\right| = \left|\int_{x=-\infty}^{t_0} \widehat{f}(x) - f(x) dx\right| \le \int_{x=-\infty}^{t_0} \left|\widehat{f}(x) - f(x)\right| dx \qquad (1)$$

Consider some partition $-\infty < t_m < t_{m-1} < \ldots < t_0$, where for each $\left|t_i - t_{i-1}\right| = \Delta > 0$. Then we may rewrite (1) as

$$\int_{x=-\infty}^{t_0} \left|\widehat{f}(x) - f(x)\right| dx$$

$$= \int_{x=-\infty}^{t_m} \left|\widehat{f}(x) - f(x)\right| dx + \int_{x=t_m}^{t_{m-1}} \left|\widehat{f}(x) - f(x)\right| dx + \ldots + \int_{x=t_1}^{t_0} \left|\widehat{f}(x) - f(x)\right| dx$$

$$\underset{m\to\infty}{\to} \sum_{i=1}^{\infty} \int_{x=t_i}^{t_{i-1}} \left|\widehat{f}(x) - f(x)\right| dx \qquad (2)$$

The last line is true because $m \to \infty$ implies $t_m \to -\infty$, and, since $\int_{x=-\infty}^{t_m} \left| \widehat{f}(x) - f(x) \right| dx \le \int_{x \in \mathbb{R}} \left| \widehat{f}(x) - f(x) \right| dx \le 2$ is finite, the first term in the second line of (2) converges to zero.

Thus (2) contains integrals with finite borders of identical length only. For any such term we find that:

$$\lim_{n\to\infty} P\left(\int_{x=t_i}^{t_{i-1}} \left| \widehat{f}(x) - f(x) \right| dx > \varepsilon \right) \le \lim_{n\to\infty} P\left(\int_{x=t_i}^{t_{i-1}} \sup_{a\in\mathbb{R}} \left| \widehat{f}(x) - f(x) \right| dx > \varepsilon \right)$$

$$= \lim_{n\to\infty} P\left(\left(t_{i-1} - t_i \right) \cdot \sup_{a\in\mathbb{R}} \left| \widehat{f}(a) - f(a) \right| > \varepsilon \right) = \lim_{n\to\infty} P\left(\sup_{a\in\mathbb{R}} \left| \widehat{f}(a) - f(a) \right| > \delta \right) = 0 \qquad (3)$$

Considering (3), the probability limit of every summand in (2) is zero. Therefore, by Slutsky theorem, we conclude for equation (1):

$$\left| \widehat{F}(t_0) - F(t_0) \right| = \left| \int_{x=-\infty}^{t_0} \widehat{f}(x) - f(x) dx \right| \le \sum_{i=1}^{\infty} \int_{x=t_i}^{t_{i-1}} \left| \widehat{f}(x) - f(x) \right| dx$$

$$\le \sum_{i=1}^{\infty} \int_{x=t_i}^{t_{i-1}} \sup_{a\in\mathbb{R}} \left| \widehat{f}(a) - f(a) \right| dx \xrightarrow{p} 0 \qquad (4)$$

Thus the probability limit of the deviation of the estimate from the true d.f. is zero. This proves consistency.