Online Support Material for: "Unique in the Crowd: The privacy bounds of human mobility"

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In this online support material, we show (1) how the temporal distribution of calls during the week is far from uniform, (2) an example of the resulting group size histogram for the Frequency Sensitive Competitive Learning scheme [1] optimized for clusters of size 4, and (3) that a power function fits the data well at all levels of spatial and temporal aggregation.

1. Grossberg S. Adaptive pattern classification and universal recoding: I. Parallel development and coding of neural feature detectors. *Biol. Cybern.* **23**, 121–134 (1976)

Fig. S1. Probability of having a location recorded per hour (blue, right axis) and per day (orange, left axis). Intuitively, knowing a point at 3AM is more likely to make a trace unique than a point at 4PM. As the given spatio-temporal points are drawn at random, they follow this temporal distribution. This makes our work a rather adversary case.

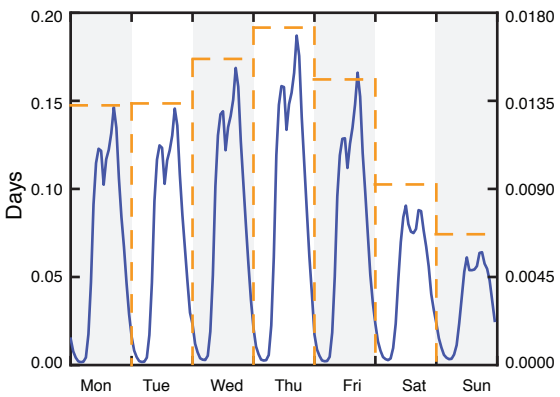
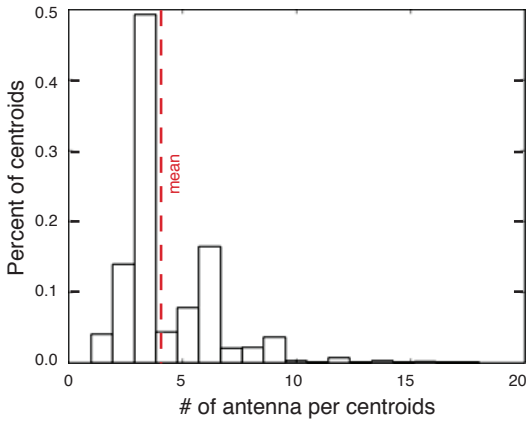


Fig. S2. Number of antenna per centroids when the algorithm for spatial aggregation aims at clusters of size four.



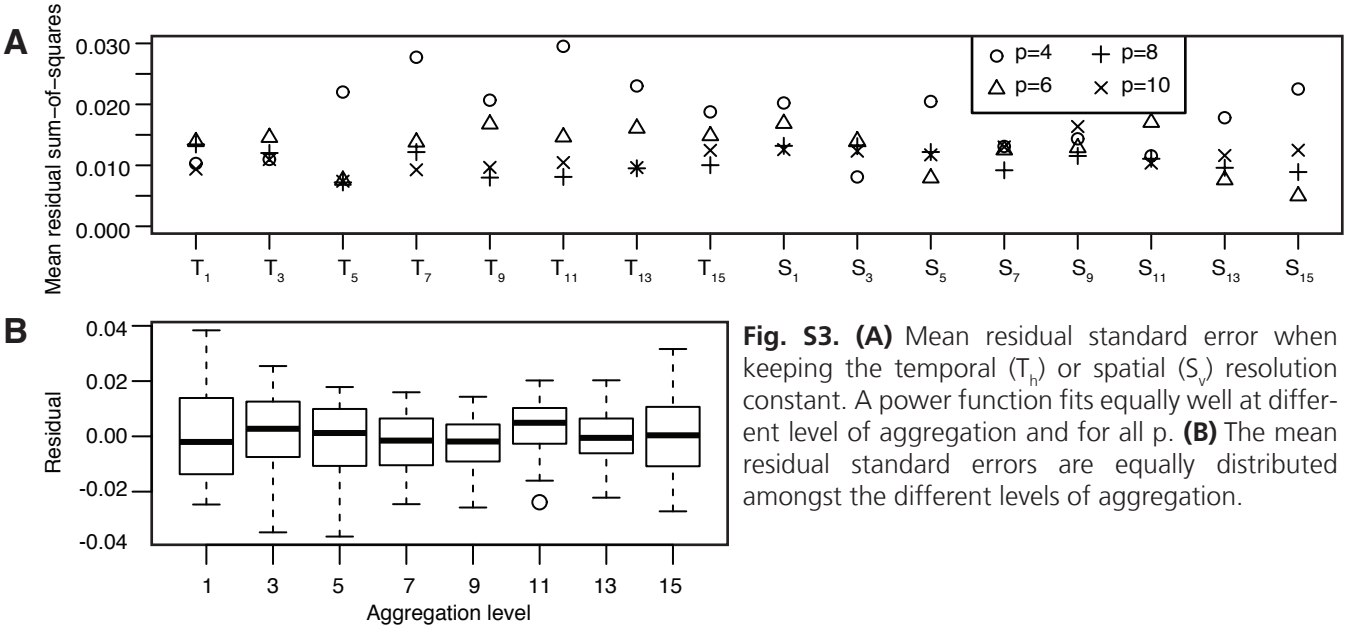


Fig. S3. (A) Mean residual standard error when keeping the temporal (T_h) or spatial (S_v) resolution constant. A power function fits equally well at different level of aggregation and for all p. **(B)** The mean residual standard errors are equally distributed amongst the different levels of aggregation.

Table S1. Power-law function fitting

	Parameters and goodness of fit of $\mathcal{E} = \alpha - x^{\beta}$			Goodness of fit of alternative functions		
				$\mathcal{E} = \alpha - \exp(\beta x)$	$\mathcal{E} = \alpha - \beta x$	$\mathcal{E} = \alpha - \exp x^{\beta}$
p	$< \beta >^{\dagger}$	MSRE	$<$ pseudo-R^2 $>$	$<$ pseudo-R^2 $>$	$<$ pseudo-R^2 $>$	$<$ pseudo-R^2 $>$
4	0.1282 +/- 0.009 ***	0.018	0.983	0.813 ‡	0.842 ‡	0.987
6	0.1164 +/- 0.019 ***	0.012	0.987	0.863 ‡	0.886 ‡	0.976 ‡
8	0.1011 +/- 0.024 ***	0.010	0.984	0.903 ‡	0.921 ‡	0.967 ‡
10	0.0860 +/- 0.025 ***	0.011	0.975	0.915 ‡	0.930 ‡	0.960 ‡
Overall one-tailed paired t-test between the MSRE:				$p<0.001$	$p<0.001$	$p<0.001$

† +/- as SD, *** indicates a $p<0.001$, ‡ Indicates a $p<0.001$ on a one-tailed paired t-test between the MSRE of $\mathcal{E} = \alpha - x^{\beta}$ and of alternative functions