

Bielefeld Figures for the Third Wave: 2021-03-06 to 2021-06-18

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In my recounting of the Second Wave of Covid-19 in my home city of Bielefeld, Germany, I put the beginning of the Second Wave around September 2020 and its end precisely on March 6, 2021, because that is when new-infection figures started to rise again, followed a couple of weeks later by a rise in hospital admissions. The Third Wave thus begins on March 6, 2021. Its end is somewhere in mid-June, 2021. The number of new infections in the week before, $ni7d$, is down to 23 by 2021-06-18, and the number of hospitalised Covid-19 patients is down to 7, with 3 in ICU. It has not been so low since the City of Bielefeld (BI) began publishing hospitalisation figures on its WWW site on 2020-10-20.

From near the beginning of the Third Wave, the Federal Government and others had observed that the patchwork manner in which states were determining their lockdown restrictions in consultation with the Federal Government, through lengthy monthly videoconferences between the Chancellor and the Minister-Presidents of the states, was no longer effective. The Federal Government thus introduced legislation to set restrictions and their levels, which was passed by the Bundestag, the Federal Parliament, in April.

A set of measures called the “Emergency Brake” was set at a level of over 100 new infections per 100,000 residents in 7 days ($ni10^5r7d$), first by Federal/State agreement in March, and then as Federal law by the Bundestag in April. Below that, Level 3 restrictions applied at $50 \leq ni10^5r7d < 100$; Level 2 restrictions at $35 \leq ni10^5r7d < 50$, and Level 1 restrictions at $ni10^5r7d < 35$.

For BI, with just over 334,000 residents, “Emergency Brake” was therefore to be applied at $335 ni7d$, Level 3 is $167 \leq ni7d < 335$, Level 2 is $117 \leq ni7d < 167$ and Level 1 is $ni7d < 117$.

BI went from “Emergency Brake” number to Level 3 numbers on either 2021-05-24 or 2021-05-26, depending on which $ni7d$ numbers you observe (there are two sets – see below); into Level 2 numbers on 2021-06-02 or 2021-06-04, and into Level 1 numbers on 2021-06-09. So,

Gathering the data has been complicated. The reporting conventions for the local newspaper Neue Westfälische (Zeitung), NW, changed during the period. The daily reports of new infections from the NW almost never coincided with the daily reports from BI over the period. NW was publishing daily figures for the previous week, from the Robert Koch Institute (RKI, keeper of the “official” figures), and correcting those day to day as delayed reports were registered by RKI, so one could expect a daily report to be added-to for three or four subsequent days before stabilising. And they were different from what BI was reporting (BI- $ni1d$ below).

On Wednesday, June 9, however, NW began publishing the figures used to determine easing of the lockdown restrictions. They stopped adjusting the figures for delayed reports, and for some reason the previous figures were now the figures for one day later (that is, for example, the figure reported for 2021-06-04 was now the figure reported for 2021-06-05). I corresponded with the NW about the change, saying I was trying to collect reliable figures for each day's new-infection number ($ni1d$), and they responded saying that they didn't think they (that is, their new presentation format) could help with that. What an odd statement! I am used to newspapers as being, amongst other things, organs for presenting reliable information amongst the cacophony of suggestions.

Whatever. The RKI has a big Excel spreadsheet publishing $ni7d$ figures daily for each of the 400 or so local-government regions+cities in Germany, but that is also without delayed corrections (that is,

they don't adjust an entry when it is in). RKI only seems to deal in ni7d figures – that is what is on its JHU-type Dashboard also. I give those figures below as RKI-ni7d. The RKI- ni10⁵r7d can be calculated from this by dividing by 3.34 (and rounding to one decimal place).

The other continuity in is the BI WWW page. I follow the BI-ni1d and calculate ni7d from these figures, denoted as PBL- (BI-) ni7d, because, for some unexplained reason, the published BI ni7d figure did not appear to come from the sum of its own figures for the previous seven days. I calculate the ni10⁵r7d figure from this by dividing by 3.34, and rounding to one decimal place, denoted PBL- (BI-) ni10⁵r7d.

I started off giving the 7dmi figure, but then gave that up in mid-April, because the 7-day figures are likely more representative.

So the figure below are

- BI ni1d figures, the ni7d and ni10⁵r7d figures calculated from that;
- RKI ni7d figures, and the RKI ni10⁵r7d figure
- Up until mid-April, the 7dmi.

Date	RKI- ni10 ⁵ r7d	PBL- (BI-) ni10 ⁵ r7d	BI- ni1d	RKI- ni7d	PBL- (BI-) ni7d	7dmi
2021-02-20	39.5		18	132		
2021-02-21	41.3		23	138		
2021-02-22	43.7		11	146		
2021-02-23	40.7		5	136		
2021-02-24	36.2		22	121		
2021-02-25	38.0		28	127		
2021-02-26	34.7	38.6	22	116	129	19.2
2021-02-27	33.2	39.5	21	111	132	19.8
2021-02-28	36.5	38.0	18	122	127	18.8
2021-03-01	34.4	35.3	2	115	118	17.6
2021-03-02	31.4	34.1	1	105	114	17.0
2021-03-03	28.1	33.5	20	94	112	16.6
2021-03-04	29.3	33.8	29	98	113	16.6
2021-03-05	28.1	32.0	16	94	107	15.4
2021-03-06	26.9	30.8	17	90	103	14.6
2021-03-07	31.1	31.7	21	104	106	15.2
2021-03-08	32.6	32.9	6	109	110	16.0
2021-03-09	30.2	33.2	2	101	111	16.0
2021-03-10	29.3	36.5	31	98	122	17.8
2021-03-11	33.2	36.2	28	111	121	17.6
2021-03-12	37.4	38.9	25	125	130	19.4
2021-03-13	38.0	41.3	25	127	138	21.0
2021-03-14	44.0	45.2	34	147	151	23.0
2021-03-15	44.6	44.6	4	149	149	22.6
2021-03-16	42.5	45.8	6	142	153	23.0
2021-03-17	39.5	43.7	24	132	146	21.6

2021-03-18	45.2	47.3	40	151	158	22.8
2021-03-19	45.8	51.2	38	153	171	25.4
2021-03-20	52.7	59.0	51	176	197	28.4
2021-03-21	57.2	58.1	31	191	194	27.8
2021-03-22	66.7	67.1	34	223	224	33.4
2021-03-23	61.3	67.1	6	205	224	33.4
2021-03-24	67.9	76.1	54	227	254	38.8
2021-03-25	80.5	87.1	77	269	291	41.6
2021-03-26	88.6	99.7	80	296	333	49.4
2021-03-27	105.0	112.9	95	351	377	55.2
2021-03-28	115.5	124.0	68	386	414	62.6
2021-03-29	122.7	122.5	29	410	409	61.6
2021-03-30*	115.2	123.4	9	385	412	61.6
2021-03-31	119.4	126.1	63	399	421	63.4
2021-04-01	110.1	128.1	84	368	428	64.8
2021-04-02	106.5	129.0	83	356	431	65.4
2021-04-03	110.4	126.4	86	369	422	65.4
2021-04-04	107.4	116.2	34	359	388	58.6
2021-04-05	–		–	349	–	–
2021-04-06**	104.7	120.1	51	350	401	56.2
2021-04-07	91.0	109.0	26	304	364	50.4
2021-04-08	89.5	110.8	90	299	370	50.8
2021-04-09	91.3	111.1	84	305	371	51.0
2021-04-10	123.0	128.7	145	411	430	51.8
2021-04-11	141.5	152.7	114	473	510	67.8
2021-04-12†	150.5	168.6	53	503	563	78.4
2021-04-13	149.9	160.2	23	501	535	73.4

Notes

* The very low number of infected on 2021-03-30 is likely due to underreporting on the first festival holiday of Easter, Good Friday 2021-04-01.

** I assume that the total of 51 for 2021-04-06 is the total since last reporting, which was two days before. (The 2021-04-05 figure thereby counts towards 7dmi, even though there are no explicit figures for this date.)

† The lack of numbers on 2021-04-05 drop out of the totals today. This leads to a leap in 7dmi, which likely has been depressed.

On 2021-04-12 BI published daily numbers, as well as 7-day-incidence-per-100,000 numbers, from the State Health Centre for North-Rhine-Westphalia (Landeszentrum Gesundheit Nordrhein-Westfalen), which has offices in Bielefeld, Münster and Bochum. These numbers differ from the `ni1d` and `ni105r7d` numbers given daily on the BI WWW site. So, to add to the frustration that the BI 7-day number is not identical to the sum of the numbers BI gave over those 7 days, we can add the frustration that some other official health agency is giving out other sets of numbers that do not cohere. It is surely important to have one set of agreed figures, derived according to explicit criteria.

But in the biggest public health crisis of our lifetimes, the vaunted German public health bureaucracy is apparently unable to do even that.

The stable NW-ni1d daily figures differ notably from the ni1d figures published daily on the Bielefeld City WWW site, the BI-ni1d, which nominally represent the previous day's new infections up to midnight. To show the difference, I have continued with the BI-ni1d numbers until 2021-05-02.

From 2021-04-26 I have started calculating PBL-ni10⁵r7d from the NW-ni1d figures. They start converging with the NW-ni10⁵r7d figures, from 2021-04-29 on.

From 2021-04-20 I have stopped calculation 7dmi. The reason is that, although test results are varying over the week, the “new infection” figures indeed count people verifiably infected, even though the specific day might not be quite right, and instances are added up to a number of days later. In these circumstances, a multi-day average seems an appropriate measure. The ni10⁵r7d is thus appropriate (since the population number is over the time range stable enough). **However, the NW- ni10⁵r7d given is not identical to the ni10⁵r7d given for the same day on the Bielefeld city WWW site, although the daily numbers are the same**. Neither is the same as what I calculate from the NW daily figures, although the differences are small; from 2021-05-28 my ni10⁵r7d, denoted PBL- ni10⁵r7d, calculated from the NW-accumulative figures is identical to the NW-ni10⁵r7d

Date	RKI- ni10 ⁵ r7d	NW- n..r7d	PBL- n..r7d	NW- ni1d	BI- ni1d	RKI- ni7d	PBL- ni7d	7dmi
2021-04-12†	150.5	164.9	168.6	59	53	503	563	78.4
2021-04-13	149.9	188.2	160.2	140	23	501	535	73.4
2021-04-14	157.1	196.6	178.1	158	86	525	595	85.4
2021-04-15	155.6	194.8	188.3	127	124	520	629	92.2
2021-04-16	143.3	193.6	190.4	109	91	479	636	93.6
2021-04-17	142.7	205.9	180.2	81	111	477	602	91.0
2021-04-18	161.3	205.9	176.7	14	102	539	590	88.6
2021-04-19	197.8	207.7	202.1	65	138	661	675	102.8
2021-04-20	191.5	219.0		178	38	640		
2021-04-21	172.4	219.3		159	76	576		
2021-04-22	161.3	229.8		161	121	539		
2021-04-23	186.4	240.9		144	209	623		
2021-04-24	199.6	225.6		31	153	667		
2021-04-25	216.6	222.7		21	139	724		
2021-04-26		235.2	224.9	91	35	745		
2021-04-27		225.9	221.0	146	23	703		
2021-04-28		226.5	221.0	161	111	634		
2021-04-29		203.8	203.0	84	126	601	PBL-ni7d	PBL-ni7d
2021-04-30		205.6	205.4	152	148	585	from	from

2021-05-01	213.0	213.7	57	127	566	NW-nild	BI-nild
2021-05-02	208.9	209.0	7	130	665	698	700
2021-05-03	207.4	207.5	86	43	687	693	708
2021-05-04	194.8	194.9	104	3	599	651	688
2021-05-05	179.5	179.6	110	129	581	600	706
2021-05-06	190.0	190.4	120	121	539	636	701
2021-05-07	183.1	183.2	128	105	560	612	658
2021-05-08	177.4	177.3	37	134	542	592	665
2021-05-09	178.3	177.3	9	88	573	594	623
2021-05-10	166.4	166.5	48	21	587	556	601
2021-05-11	170.0	169.8	115	26	527	567	624
2021-05-12	170.9	168.3	107	63	486	562	558
2021-05-13	144.2	142.5	32	128	506	476	565
2021-05-14	127.8	126.4	74	70	454	422	530
2021-05-15	126.3	126.1	36	33	359	421	429
2021-05-16	127.2	126.7	11	79	400	423	420
2021-05-17	129.3	128.4	54	28	418	429	427
2021-05-18	128.7	128.4	115	32	402	429	433
2021-05-19	110.7	110.5	47	108	383	369	478
2021-05-20	114.0	113.2	41	60	335	378	410
2021-05-21	116.1	115.3	81	64	387	385	404
2021-05-22	112.5	112.0	25	51	344	374	422
2021-05-23	110.7	110.2	5	40	349	368	383
2021-05-24	96.9	96.4	8	22	359	322	377
2021-05-25	73.6	73.1	37	4	309	244	349
2021-05-26	70.9	71.0	40	7	201	237	248
2021-05-27	69.7	69.8	37	52	204	233	240
2021-05-28	56.9	56.9	38	47	210	190	223
2021-05-29	53.0	53.0	12	46	175	177	218
2021-05-30	52.7	52.7	4	23	173	176	201
2021-05-31	56.9	56.9	22	6	174	190	185
2021-06-01	53.6	53.6	26	7	173	179	188
2021-06-02	49.1	49.1	25	36	172	164	217
2021-06-03	41.9	41.9	13	26	158	140	191
2021-06-04	35.3	35.3	16	9	130	118	153
2021-06-05	35.3	35.6	13	15	107	119	122
2021-06-06	34.4	35.3	3	15	110	118	114
2021-06-07*				9	115		117
2021-06-08				7	100		117
2021-06-09				12	86		93
2021-06-10				19	80		86
2021-06-11				5	71		82
2021-06-12				6	61		73
2021-06-13				8	56		66

2021-06-14	0	53	57
2021-06-15	3	50	53
2021-06-16	1	32	42
2021-06-17	3	21	26
2021-06-18	2	17	23

2021-05-24 That the ni1d is reducing is clear at this point from the following observations. Generalising, in the 34 days from 2021-04-10 until 2021-05-13 there has been a 7-day cycle roughly of 4 days over 100 ni1d followed by three days under 100 ni1d. This cycle is in part caused by different numbers collected over weekends from those collected during the week; a cycle we have seen in all the waves. This cycle was broken on 2021-05-13. Since then, there has been just one day with ni1d over 100.

Specifically, the ni1d was over 100 on 2021-04-10 and -04-11, then under on -04-12, then in the four days from -04-13 to -04-16 again over 100. That is, six days over 100 out of seven. Then again three days under 100. Then 4 days over 100, from -04-20 to -04-23. Then three days under. Then four days, of which three were over -04-27 to -04-30. Then three days under. Then four days over, -05-04 to -05-07. Then three days under. But following this, only two days over, -05-11 and 05-12. Since -05-13, only one day has been over, on -05-18.

I doubt that the end of May is strictly comparable in terms of ni1d with early March, because although the numbers are similar I think more people are being tested/testing themselves. Apparently we now have some 100 quick-test centres in BI. Quick tests are now being delivered to kindergarten and child day care centres, enough to test kids and personnel twice a week. These tests are also being distributed to parents of such kids. The quick tests are all lateral-flow tests, of course. Doubts have been expressed as to the accuracy of some of them, in particular in non-professional contexts in which samples are taken by lay people, but a survey by the Royal Pharmaceutical Society suggests they are a useful resource on the society level <https://pharmaceutical-journal.com/article/feature/how-reliable-are-lateral-flow-covid-19-tests> (see also entry for 2021-06-14 in my Notes on Covid-19 Part 26).

On 2021-06-07 the NW published the daily numbers – offset by one day (later). I wrote them to say that I was collecting daily numbers and had presumed from the given sources (RKI and BI city) that, since these were not the BI city numbers, they were the RKI daily numbers. The NW wrote back to explain the shift – it was apparently needed for calculation of the ni7d figure that was being used by the NRW state to determine the easing of lockdown. BI has been on Level 3, which is seen as quite restrictive, and last week was nearing on Level 2. The NW wanted to show numbers that indicated this. In fact, they went down to Level 1 in that same week.

The levels are as follows. The Federal “Emergency brake” [sic] is applied at $100 \leq \text{ni}105\text{r}7\text{d}$; Level 3 is $50 \leq \text{ni}105\text{r}7\text{d} < 100$; Level 2 is $35 \leq \text{ni}105\text{r}7\text{d} < 50$; Level 1 is $\text{ni}105\text{r}7\text{d} < 35$. For Bielefeld, with between 344,000 and 345,000 residents, expressed in ni7d the levels are Level 3 is $167 \leq \text{ni}7\text{d} < 334$; Level 2 is $117 \leq \text{ni}7\text{d} < 167$; Level 1 is $\text{ni}7\text{d} < 117$.

I looked at the daily numbers from RKI. They issue them and revise them daily for ni7d but not for ni1d. And also without including delayed figures which come in later. Theoretically one could calculate ni1d from ni7d plus a seed, but would have no way of detecting inaccuracies, and no way of accounting for infection figures which are delayed. So I give up NW-ni1d figures on 2021-06-07, include the RKI-ni7d figure which they publish, note the BI-ni1d figure, and calculate a ni7d figure from the BI figure alone. Does this confused arithmetic matter? Probably not much. The figures have gone down drastically in the week from 2021-06-06 to 2021-06-13, and further up to 2021-06-18. I think **we can declare the end of the third wave by Friday 2021-06-18**.

(Note added 2021-06-29: the numbers continued to fall. Two new infections in the week to 2021-06-29, two Covid-19 patients in hospital, both in ICU.)

Reasons for this are as follows. On 2021-06-18, for 7 days all ni1d have been single figures. On 2021-06-14 there was indeed a day with no new infections registered. The ni7d on 2021-06-18 is 26. That gives a ni10⁵r7d of 7.8, which is comparable to September 2020 before the beginning of the second wave (see Peter Bernard Ladkin, The Second Wave of Covid-19 in Bielefeld: 2020-09-05 to 2021-03-06, preprint 2021-03-21). Also (see below) the number of people hospitalised, and in ICU, has gone down drastically by 2021-06-18 to just 5 hospitalised and 3 in ICU. That is way less than any numbers since the beginning of reporting, on 2020-10-20 with 15 hospitalised and 9 in ICU.

In the local newspaper NW on 2021-04-22, the epidemiologist Gérard Krause, Director of the Helmholtz Centre for Infection Research in Brunswick, suggested that multiple measures of the pandemic, not just the ni10⁵r7d (and which one of the three of those above do you take?), are important. He suggested that the number of people in ICU was an important measure. Yes, that seems a no-brainer. Also, surely, the number of people in hospital because of Covid-19 is also important. That is why I have been noting it since figures were first available on 2020-10-20.

Date	Hospitalisations	ICU	Deaths
2021-03-01	41	15	1
2021-03-02	41	15	3
2021-03-03	39	14	2
2021-03-04	40	14	1
2021-03-05	44	15	1
2021-03-06	46	16	0
2021-03-07	51	16	0
2021-03-08	50	16	1
2021-03-09	47	17	1
2021-03-10	42	13	3
2021-03-11	41	12	0
2021-03-12	40	13	0
2021-03-13	37	11	0
2021-03-14	—	—	0
2021-03-15	40	13	0
2021-03-16	35	11	1

2021-03-17	35	9	0
2021-03-18	29	10	0
2021-03-19	31	9	1
2021-03-20	30	11	1
2021-03-21	34	12	0
2021-03-22	40	15	0
2021-03-23	31	10	0
2021-03-24	32	12	0
2021-03-25	38	15	0
2021-03-26	43	15	2
2021-03-27	39	16	0
2021-03-28	38	14	1
2021-03-29	—	—	0
2021-03-30	—	—	0
2021-03-31	46	15	0
2021-04-01	44	15	0
2021-04-02	43	12	0
2021-04-03	48	12	0
2021-04-04	50	14	0
2021-04-05	57	14	1
2021-04-06	—	—	0
2021-04-07	62	17	0
2021-04-08	57	17	0
2021-04-09	53	15	0
2021-04-10	58	15	0
2021-04-11	63	13	0
2021-04-12	71	15	0
2021-04-13	72	16	0
2021-04-14	72	19	2
2021-04-15	66	16	0
2021-04-16	—	—	0
2021-04-17	66	23	1
2021-04-18	68	23	0
2021-04-19	72	21	0
2021-04-20	77	25	2
2021-04-21	—	—	0
2021-04-22	63	23	1
2021-04-23	64	27	1
2021-04-24	68	26	1
2021-04-25	71	27	0
2021-04-26	73	33	0
2021-04-27	73	33	0
2021-04-28	77	30	1
2021-04-29	77	27	2

2021-04-30	—	—	1
2021-05-01	—	—	1
2021-05-02	70	25	0
2021-05-03	81	26	1
2021-05-04	76	27	0
2021-05-05	—	—	3
2021-05-06	75	27	1
2021-05-07	78	28	2
2021-05-08	67	27	0
2021-05-09	66	27	0
2021-05-10	67	23	4
2021-05-11	—	—	2
2021-05-12	—	—	1
2021-05-13	57	24	1
2021-05-14	60	22	1
2021-05-15	—	—	1
2021-05-16	—	—	1
2021-05-17	54	24	0
2021-05-18	57	23	3
2021-05-19	53	22	2
2021-05-20	48	19	0
2021-05-21	39	19	0
2021-05-22	—	—	0
2021-05-23	—	—	1
2021-05-24	—	—	0
2021-05-25	40	19	1
2021-05-26	35	20	0
2021-05-27	34	20	1
2021-05-28	33	19	1
2021-05-29	—	—	0
2021-05-30	—	—	0
2021-05-31	28	16	0
2021-06-01	—	—	0
2021-06-02	23	10	0
2021-06-03	—	—	2
2021-06-04	17	8	0
2021-06-05	—	—	0
2021-06-06	—	—	0
2021-06-07	17	8	0
2021-06-08	—	—	0
2021-06-09	15	8	0
2021-06-10	16	8	1
2021-06-11	16	8	1
2021-06-12	—	—	0

2021-06-13	—	—	0
2021-06-14	—	—	0
2021-06-15	10	7	0
2021-06-16	7	4	1
2021-06-17	5	3	0
2021-06-18	7	3	0

2021-05-28 For some two weeks, the Vaccination Centre has regularly been vaccinating over 2,000 people per day. It was originally set up in December 2020 for 2,000 vaccinations per day, but has only reached that capacity recently because of the lack of supply of doses. But somewhat over a week ago, I think on Tuesday 2021-05-18, “too many” people turned up in the middle of the afternoon; the line outside became many hundreds of metres long. The reason is interesting. A certain percentage of people have not been turning up for their appointments, so the booking system has been giving out proportionately more appointments, “overbooking”. Then, on that Tuesday, almost everybody booked turned up. The Centre response was to rebook some people for the days afterwards, to extend the opening hours, and to prepare to add two further vaccination “lanes” inside. This is only the second time there have been booking problems. This time, it seems to have been human behaviour that suddenly changed. It would be interesting to know why people became at this point more diligent about their appointments. Some social perception flipped.

2021-06-04. The numbers of hospitalised Covid-19 patients in Bielefeld reported on Friday 2021-06-04 has never been as low as today since the beginning of regular reporting on 2020-10-20, at the beginning of the second wave.