

STATISTICAL DATA ON THE COMFORT LEVEL OF PURWOREJO REGENCY, JAWA TENGAH PROVINCE, INDONESIA

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Abstract

Purworejo is a district in Jawa Tengah Province, Indonesia. The comfort criteria in Purworejo at 13.00 were Very Uncomfortable, namely on August 3 2023. In Purworejo at 16.00 on August 2 - 4 2023 the comfort criteria were Uncomfortable. In Purworejo at 01.00, 04.00, 07.00, 10.00, 19.00 and 22.00 the comfort level is Comfortable.

Keywords: Purworejo, Comfort Criteria, Comfortable, Uncomfortable, Very Uncomfortable.

1. INTRODUCTION

Purworejo Regency is one of the regencies in Jawa Tengah Province, Indonesia. Purworejo Regency borders Wonosobo Regency and Magelang Regency to the north, Kulonprogo Regency to the east, the Indian Ocean to the south, and Kebumen Regency to the west.

The area of Purworejo Regency is 1,035 km². Purworejo Regency consists of sixteen sub-districts, namely: (1) Brunorejo; (2) Bener; (3) Pituruh; (4) Kemiri; (5) Gebang; (6) Loano; (7) Butuh; (8) Kutoarjo; (9) Bayan; (10) Banyuurip; (11) Purworejo; (12) Kaligesing; (13) Grabag; (14) Ngombol; (15) Purwodadi; (16) Bagelan.



Figure 1. Purworejo Bagelan Park



Figure 2. Regional People's Representative Council of Purworejo Regency



Figure 3. Kodim 0708 Purworejo



Figure 4. Office of the Purworejo Regent

The area of Purworejo Regency is 1,035 km². Purworejo Regency consists of sixteen sub-districts, namely: (1) Brunorejo; (2) Bener; (3) Pituruh; (4) Kemiri; (5) Gebang; (6) Loano; (7) Butuh; (8) Kutoarjo; (9) Bayan; (10) Banyuurip; (11) Purworejo; (12) Kaligesing; (13) Grabag; (14) Ngombol; (15) Purwodadi; (16) Bagelan.

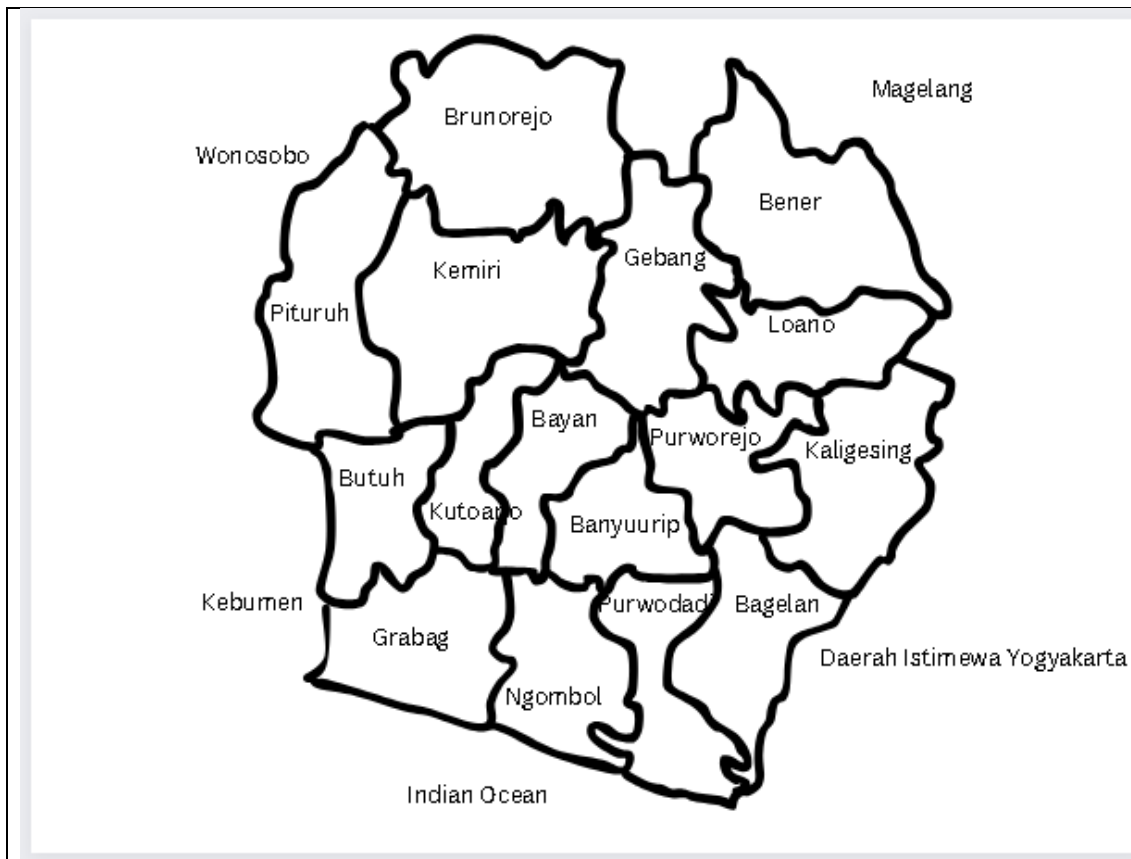


Figure 5. Map of Purworejo Regency

Comfort level is a standard measure of weather response to the human body. The comfort level is measured by a formula

$$THI = 0.8 \times Ta + (Ta \times HR)/500$$

THI is Temperature Humidity Index. *Ta* is Water Temperature. *HR* is Relative Humidity. Comfort criteria are $THI \leq 29$ comfortable, $29 < THI \leq 30.5$ uncomfortable, $THI > 30.5$ very uncomfortable.

2. COMFORT LEVEL OF PURWOREJO REGENCY

The research data source is Time and Date (2023). The data collection time is 2 – 16 August 2023. Table 1 is temperature and humidity data for 2 – 16 August 2023 in Purworejo Regency.

Table 1. Humidity temperature on 2 – 16 August 2023, Purworejo Regency

No	Date	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
1	August 2, 2023	01.00	28	73	26.488	Comfortable
		04.00	27	68	25.272	Comfortable

No	Date	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
		07.00	27	70	25.38	Comfortable
		10.00	31	55	28.21	Comfortable
		13.00	34	48	30.464	Uncomfortable
		16.00	31	70	29.14	Uncomfortable
		19.00	29	75	27.55	Comfortable
		22.00	29	74	27.492	Comfortable
2	August 3, 2023	01.00	27	79	25.866	Comfortable
		04.00	26	79	24.908	Comfortable
		07.00	26	75	24.7	Comfortable
		10.00	31	58	28.396	Comfortable
		13.00	34	50	30.6	Very Uncomfortable
		16.00	33	48	29.568	Uncomfortable
		19.00	29	77	27.666	Comfortable
		22.00	28	67	26.152	Comfortable
3	August 4, 2023	01.00	26	69	24.388	Comfortable
		04.00	25	73	23.65	Comfortable
		07.00	25	77	23.85	Comfortable
		10.00	31	52	28.024	Comfortable
		13.00	34	46	30.328	Uncomfortable
		16.00	34	42	30.056	Uncomfortable
		19.00	29	78	27.724	Comfortable
		22.00	28	75	26.6	Comfortable
4	August 5, 2023	01.00	26	65	24.18	Comfortable
		04.00	24	76	22.848	Comfortable
		07.00	25	76	23.8	Comfortable
		10.00	31	55	28.21	Comfortable
		13.00	34	39	29.852	Uncomfortable
		16.00	31	61	28.582	Comfortable
		19.00	29	67	27.086	Comfortable
		22.00	28	70	26.32	Comfortable
5	August 6, 2023	01.00	27	74	25.596	Comfortable
		04.00	26	76	24.752	Comfortable
		07.00	26	77	24.804	Comfortable
		10.00	32	56	29.184	Comfortable
		13.00	34	48	30.464	Uncomfortable
		16.00	32	63	29.632	Uncomfortable

No	Date	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
		19.00	29	72	27.376	Comfortable
		22.00	28	74	26.544	Comfortable
6	August 7, 2023	01.00	26	79	24.908	Comfortable
		04.00	26	81	25.012	Comfortable
		07.00	26	75	24.7	Comfortable
		10.00	31	52	28.024	Comfortable
		13.00	34	44	30.192	Uncomfortable
		16.00	31	66	28.892	Comfortable
		19.00	29	81	27.898	Comfortable
		22.00	28	80	26.88	Comfortable
7	August 8, 2023	01.00	25	94	24.7	Comfortable
		04.00	–	–	–	–
		07.00	24	81	23.088	Comfortable
		10.00	30	62	27.72	Comfortable
		13.00	32	54	29.056	Uncomfortable
		16.00	30	71	28.26	Comfortable
		19.00	29	78	27.724	Comfortable
		22.00	28	73	26.488	Comfortable
8	August 9, 2023	01.00	27	75	25.65	Comfortable
		04.00	26	72	24.544	Comfortable
		07.00	25	75	23.75	Comfortable
		10.00	29	52	26.216	Comfortable
		13.00	32	50	28.8	Comfortable
		16.00	30	64	27.84	Comfortable
		19.00	28	75	26.6	Comfortable
		22.00	27	72	25.488	Comfortable
9	August 10, 2023	01.00	27	76	25.704	Comfortable
		04.00	26	74	24.648	Comfortable
		07.00	26	76	24.752	Comfortable
		10.00	30	58	27.48	Comfortable
		13.00	32	57	29.248	Uncomfortable
		16.00	31	64	28.768	Comfortable
		19.00	28	72	26.432	Comfortable
		22.00	28	75	26.6	Comfortable
10	August 11, 2023	01.00	26	78	24.856	Comfortable
		04.00	23	87	22.402	Comfortable

No	Date	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
		07.00	23	76	21.896	Comfortable
		10.00	30	40	26.4	Comfortable
		13.00	33	44	29.304	Uncomfortable
		16.00	30	58	27.48	Comfortable
		19.00	28	66	26.096	Comfortable
		22.00	27	73	25.542	Comfortable
11	August 12, 2023	01.00	24	83	23.184	Comfortable
		04.00	23	86	22.356	Comfortable
		07.00	23	68	21.528	Comfortable
		10.00	–	–	–	–
		13.00	–	–	–	–
		16.00	–	–	–	–
		19.00	–	–	–	–
		22.00	–	–	–	–
12	August 13, 2023	01.00	–	–	–	–
		04.00	–	–	–	–
		07.00	–	–	–	–
		10.00	–	–	–	–
		13.00	33	44	29.304	Uncomfortable
		16.00	30	61	27.66	Comfortable
		19.00	29	67	27.086	Comfortable
		22.00	27	66	25.164	Comfortable
13	August 14, 2023	01.00	26	74	24.648	Comfortable
		04.00	25	75	23.75	Comfortable
		07.00	25	72	23.6	Comfortable
		10.00	31	45	27.59	Comfortable
		13.00	34	34	29.512	Uncomfortable
		16.00	31	64	28.768	Comfortable
		19.00	28	71	26.376	Comfortable
		22.00	28	76	26.656	Comfortable
14	August 15, 2023	01.00	27	74	25.596	Comfortable
		04.00	25	83	24.15	Comfortable
		07.00	24	77	22.896	Comfortable
		10.00	31	48	27.776	Comfortable
		13.00	33	45	29.37	Uncomfortable
		16.00	31	61	28.582	Comfortable

No	Date	O'clock	Temperature (°C)	Humidity (%)	THI	Criteria
		19.00	28	74	26.544	Comfortable
		22.00	28	78	26.768	Comfortable

From Table 1 it shows that at 01.00, 04.00, 07.00, 19.00 22.00 it is comfortable, and at 13.00 there are comfortable, uncomfortable and very uncomfortable, and at 16.00 there are comfortable and uncomfortable. Table 2 shows the comfort criteria at certain hours.

Table 2. Comfort Criteria at Certain Hours

No	O'clock	Comfort Criteria
1	01.00	Comfortable
2	04.00	Comfortable
3	07.00	Comfortable
4	10.00	Comfortable
5	13.00	Comfortable / Uncomfortable / Very Uncomfortable
6	16.00	Comfortable / Uncomfortable
7	19.00	Comfortable
8	22.00	Comfortable

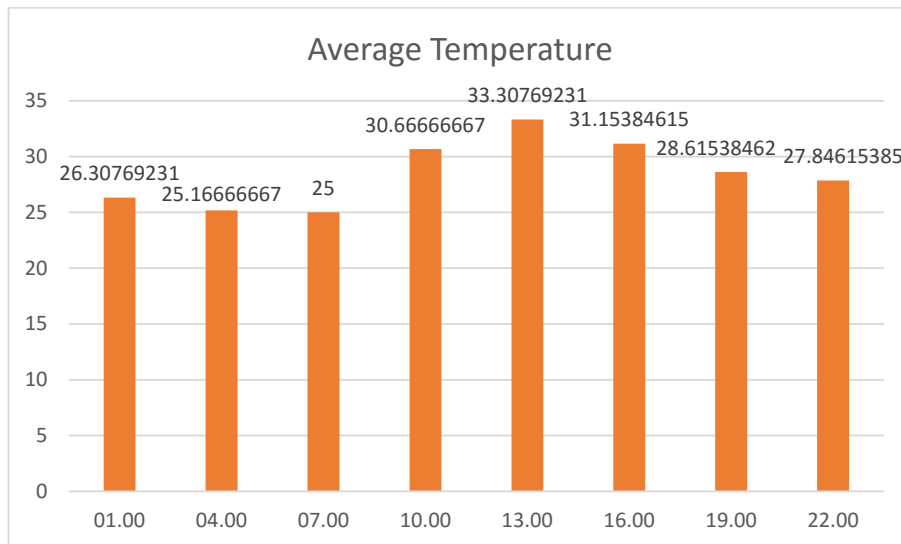


Figure 6. Average Temperature 2 – 15 August 2023

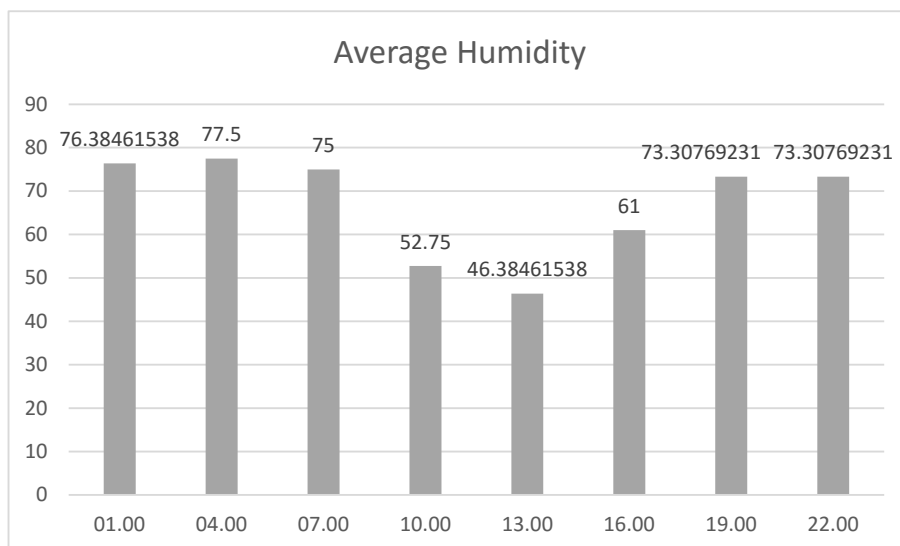


Figure 7. Average Humidity August 2 – 15 2023

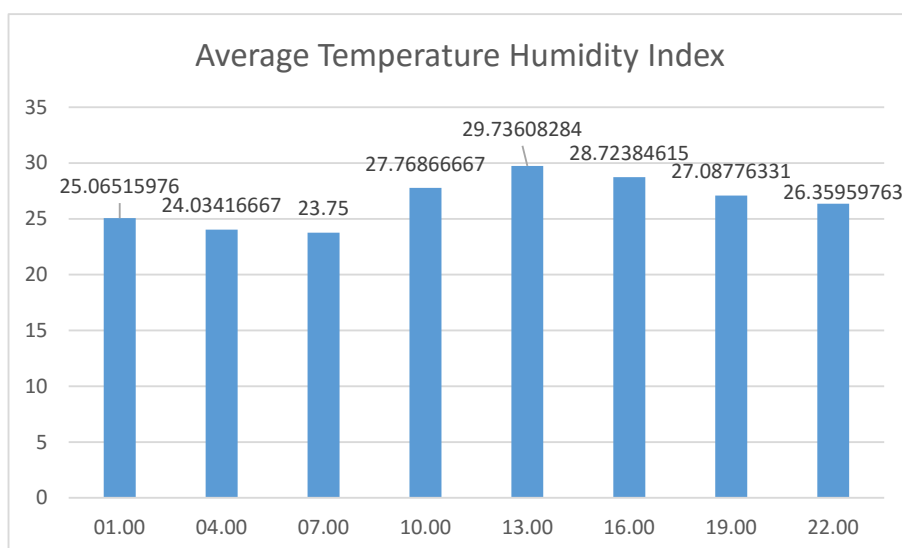


Figure 8. Average Temperature Humidity Index for August 2 – 15 2023

Figure 6 is the average temperature on 2 – 15 August 2023. The lowest temperature was 25 °C at 07.00 and the highest temperature was 33.3 °C at 13.00. Figure 7 is the average humidity on August 2 – 15 2023. The lowest humidity is 46 at 13.00 and the highest humidity is 77.5 at 04.00. Figure 8 is the average Temperature Humidity Index on 2 – 15 August 2023. The lowest Temperature Humidity Index was 23.75 at 07.00 (this hour is included in the Comfortable criteria) and the highest Temperature Humidity Index was 29,736 (this hour is included in the Uncomfortable criteria).

3. CONCLUSION

Purworejo is a district in Central Java Province, Indonesia. At 01.00, 04.00, 07.00, 10.00, 19.00 and 22.00 the comfort level is comfortable. At 13.00 the comfort level is Comfortable / Uncomfortable / Very Uncomfortable. At 16.00 the comfort level is Comfortable / Uncomfortable.

4. REFERENCES

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