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XAUUSD average range by hour and session (Asia, London, New York)

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Abstract

When in the day does gold move? We measured the high-to-low range of 121,823 hourly XAUUSD bars from June 2004 to September 2025, in UTC, by hour, session, year and weekday. The widest hour was 13:00–14:00 UTC (mean 0.508% of price), around the New York open, and the quietest 21:00–22:00 UTC (0.136%). The New York session covered on average 70.9% of the day's range, London 57.6% and Asia 46.1%. In every year from 2004 to 2025 the widest hour was 12:00, 13:00 or 14:00 UTC, although the size of moves changed a lot between years.

Keywords: gold; XAUUSD; intraday volatility; trading sessions; high-low range

JEL: G14; G15; Q02

Highlights

- **The widest hour is 13:00–14:00 UTC.** Its mean range was 0.508% of price (median US\$5.56). The three widest hours were 13:00, 14:00 and 12:00 UTC, the hours around the New York open.
- **The quietest hour is 21:00–22:00 UTC.** Its mean range was 0.136%. The widest hour moved 3.74 times as much. The average hour moved 0.279%.
- **New York makes most of the day.** The New York session (13:00–22:00 UTC) covered on average 70.9% of the day's high-to-low range. London covered 57.6% and Asia 46.1%. New York set the day's high on 46.8% of days and the low on 45.4%.
- **Monday is the quietest day.** Mean daily range 1.43% (0.93 times the average day). Friday was the widest at 1.598%.
- **The pattern held every year.** In each year from 2004 to 2025 the widest hour was 12:00, 13:00 or 14:00 UTC. The size changed a lot: the median day range was 2.475% in 2008 and 0.898% in 2018.

1. Introduction

When in the day does gold actually move? We measured the high-to-low range of every hourly XAUUSD bar from 11 Jun 2004 to 30 Sep 2025, 121,823 bars, moved them to UTC, and grouped them by hour, by trading session, by year and by weekday.

2. Data and method

Method

1. **Data:** hourly XAUUSD bars from the public dataset "xauusd-gold-price-historical-data-2004-2025" on Hugging Face (file XAU_1h_data.jsonl), the same dataset as notes 08 and 09. 121,823 bars from 11 Jun 2004 to 30 Sep 2025. It is broker-style MetaTrader data.
2. **Time zone:** the bar times are server time. The daily break (the missing hour) is at 00:00 server time all year, which is 17:00 in New York, and it moves to 23:00 only in the weeks when the US is on summer time and Europe is not. So server time is UTC+2 in winter and UTC+3 in European summer time. We moved every bar to UTC

with that rule. Check: after the change, the daily break fell at 17:00 New York time on 97.8% of Tuesday to Thursday trading days from 2007 to 2025.

3. **Hour range:** high minus low of the hourly bar, as a % of the bar's open, and in US\$.
4. **Sessions (UTC, fixed all year):** Asia 22:00–07:00, London 07:00–13:00, New York 13:00–22:00. The day runs from 22:00 UTC to 22:00 UTC. Days where a session had too few bars (Asia under 6, London under 5, New York under 6) were left out: 176 of them, mostly holidays and short days. 5,207 days were used.
5. **Day range:** highest high minus lowest low from 22:00 to 22:00 UTC, as a % of the day's first open. This is not the same day or base as note 08, which uses the broker's daily bars and the previous close, so the numbers differ a little.

3. Results

Range by hour of the day (UTC)

Hourly high-to-low range by UTC hour, XAUUSD, 11 Jun 2004 to 30 Sep 2025

Hour (UTC)	Bars	Mean	Median	Median US\$	vs average	Session
00:00–01:00	5,326	0.213%	0.172%	US\$2.25	0.76x	Asia
01:00–02:00	5,323	0.241%	0.194%	US\$2.62	0.86x	Asia
02:00–03:00	5,323	0.191%	0.155%	US\$2.01	0.68x	Asia
03:00–04:00	5,326	0.171%	0.137%	US\$1.78	0.61x	Asia
04:00–05:00	5,333	0.168%	0.131%	US\$1.70	0.60x	Asia
05:00–06:00	5,348	0.217%	0.177%	US\$2.30	0.78x	Asia
06:00–07:00	5,359	0.263%	0.213%	US\$2.79	0.94x	Asia
07:00–08:00	5,367	0.285%	0.236%	US\$3.12	1.02x	London
08:00–09:00	5,370	0.274%	0.226%	US\$3.00	0.98x	London
09:00–10:00	5,372	0.253%	0.210%	US\$2.73	0.91x	London
10:00–11:00	5,375	0.255%	0.207%	US\$2.70	0.91x	London
11:00–12:00	5,375	0.335%	0.249%	US\$3.30	1.20x	London
12:00–13:00	5,374	0.468%	0.378%	US\$4.79	1.68x	London
13:00–14:00	5,372	0.508%	0.429%	US\$5.56	1.82x	New York
14:00–15:00	5,371	0.484%	0.406%	US\$5.28	1.73x	New York
15:00–16:00	5,370	0.412%	0.339%	US\$4.33	1.47x	New York
16:00–17:00	5,362	0.332%	0.268%	US\$3.44	1.19x	New York
17:00–18:00	5,307	0.289%	0.230%	US\$3.00	1.03x	New York
18:00–19:00	5,250	0.265%	0.197%	US\$2.63	0.95x	New York
19:00–20:00	5,192	0.225%	0.170%	US\$2.30	0.81x	New York
20:00–21:00	4,830	0.167%	0.135%	US\$1.81	0.60x	New York
21:00–22:00	1,668	0.136%	0.114%	US\$1.50	0.49x	New York
22:00–23:00	3,234	0.179%	0.127%	US\$1.62	0.64x	Asia
23:00–00:00	5,296	0.211%	0.157%	US\$2.00	0.75x	Asia

Range = high minus low of the hourly bar, as a % of its open. "vs average" = mean range of that hour divided by the mean of all hours (0.279%). US\$ values mix all price levels from 2004 to 2025; use the % columns to compare years. 21:00 and 22:00 UTC have fewer bars because the daily break falls there (21:00 in US summer time, 22:00 in winter).

In the dataset's own server time (UTC+2 in winter, UTC+3 in European summer time) the widest hour is 15:00, with a mean range of 0.515%, followed by 16:00 at 0.505%. That is the same New York open, written in a different clock. Your broker's server clock may be different, so check it before you set session times in an EA.

Range by session

We split each day into three sessions that do not overlap and together cover 24 hours. A "day" starts at 22:00 UTC with the Asia session.

Range by session, XAUUSD, 5,207 days

Session	UTC	Median range	Median US\$	Share of day	Day high set	Day low set
Asia	22:00–07:00	0.527%	US\$6.88	46.1%	30.1%	32.1%
London	07:00–13:00	0.692%	US\$9.09	57.6%	24.0%	23.3%
New York	13:00–22:00	0.882%	US\$11.60	70.9%	46.8%	45.4%
London/NY overlap	13:00–16:00	0.716%	US\$9.35	58.4%	–	–

Session range = highest high minus lowest low of the session, as a % of its first open. Share of day = session range divided by the full day's range, averaged over 5,207 days; the three shares add to more than 100% because the sessions' ranges overlap in price. "Day high set" = % of days on which that session printed the day's high (ties count for both). The London/New York overlap (13:00–16:00 UTC) is part of the New York session and is shown only for reference.

Range by year

Median range by year, XAUUSD

Year	Days	Day	Day US\$	Asia	London	New York	NY share	Widest hour
2004 (part)	120	1.254%	US\$5.20	0.506%	0.813%	0.797%	64.9%	12:00
2005	222	1.044%	US\$4.55	0.429%	0.616%	0.698%	68.7%	12:00
2006	228	1.998%	US\$11.90	0.771%	1.024%	1.347%	71.4%	13:00
2007	252	1.421%	US\$9.60	0.495%	0.789%	0.898%	67.9%	13:00
2008	253	2.475%	US\$21.40	0.870%	1.513%	1.538%	65.0%	12:00
2009	253	1.677%	US\$16.61	0.683%	1.040%	1.069%	66.4%	12:00
2010	250	1.396%	US\$16.59	0.531%	0.822%	0.910%	68.8%	13:00
2011	250	1.528%	US\$23.60	0.572%	0.793%	1.013%	72.2%	14:00
2012	250	1.234%	US\$20.63	0.434%	0.619%	0.873%	75.0%	14:00
2013	253	1.561%	US\$21.91	0.611%	0.826%	1.015%	69.1%	14:00
2014	249	1.137%	US\$14.50	0.484%	0.666%	0.758%	69.5%	13:00
2015	247	1.241%	US\$14.80	0.506%	0.637%	0.868%	73.0%	13:00
2016	252	1.269%	US\$15.95	0.589%	0.625%	0.888%	71.7%	13:00
2017	250	0.960%	US\$11.94	0.390%	0.450%	0.679%	74.2%	14:00
2018	250	0.898%	US\$11.27	0.411%	0.480%	0.589%	69.4%	13:00
2019	250	0.954%	US\$13.41	0.393%	0.476%	0.677%	73.8%	13:00
2020	252	1.406%	US\$25.15	0.659%	0.798%	0.995%	71.4%	14:00
2021	252	1.172%	US\$21.08	0.522%	0.614%	0.832%	73.6%	13:00
2022	258	1.274%	US\$22.98	0.508%	0.696%	0.859%	72.8%	13:00
2023	257	1.077%	US\$20.74	0.446%	0.547%	0.791%	75.9%	13:00
2024	259	1.242%	US\$30.63	0.559%	0.600%	0.891%	72.6%	13:00
2025 (part)	100	1.401%	US\$42.43	0.770%	0.631%	0.868%	64.8%	14:00

Medians over the session days of each year. 2004 starts on 11 Jun 2004 and 2025 ends on 30 Sep 2025, so those two years are part years. In US\$ the typical day grew from US\$4.55 in 2005 to US\$30.63 in 2024, mostly because the gold price rose.

Range by weekday

Range by weekday, XAUUSD

Weekday	Days	Mean day	Median day	vs average	Asia	London	New York
Monday	1,017	1.430%	1.156%	0.93x	0.595%	0.614%	0.750%
Tuesday	1,058	1.519%	1.292%	0.99x	0.520%	0.700%	0.866%
Wednesday	1,064	1.521%	1.291%	0.99x	0.509%	0.686%	0.948%
Thursday	1,053	1.588%	1.357%	1.04x	0.526%	0.740%	0.930%
Friday	1,015	1.598%	1.365%	1.04x	0.500%	0.727%	0.921%

Weekday of the session day. Monday's Asia session starts on Sunday at 22:00 UTC. The gap from Friday's close to the Sunday reopen is not part of any range here; see Gold weekend gaps: how often, how big.

4. Discussion

What this means for an EA

- A stop or grid step sized on quiet Asian hours is small next to the New York hours. At 13:00–14:00 UTC the median hourly range was US\$5.56, against US\$1.50 at 21:00–22:00 UTC.
- A session filter in an EA uses server time. Convert first: in this data the widest UTC hour, 13:00–14:00, is 15:00 server time in winter and 16:00 in European summer time.
- The same hour has a very different size in different years. Test on the years you plan to trade in, not on one average.

5. Limitations

Limits

- **One data source.** Not checked against a second feed. Other brokers and futures data give slightly different highs and lows.
- **Time zone is inferred.** The dataset does not state its time zone; we worked it out from the daily break, as above. Sessions use fixed UTC hours, so in US summer time the New York open falls one hour earlier inside them.
- **Spread is not included.** The bar prices do not include the spread. Spreads are usually wider in quiet hours and around the daily break, so the real cost of trading those hours is higher than the range suggests.
- **A few bad bars.** The means include some single spikes (for example the 08:00 bar on 18 Jul 2011, server time, which looks like a bad tick). Medians are not affected by them.
- **The past only.** The data ends on 30 Sep 2025. Every number here comes from our own script.

Appendix

Related notes

- Moves of 9% or more, including 30 January 2026, after this data ends: Gold's largest one-day moves.
- Single-day moves and the typical daily range: XAUUSD largest daily moves: 20 years of gold data.
- Average daily range by year and month, and how often a day beats its 14-day average: XAUUSD average daily range: 20 years of gold data by year and month.
- Worst 1 to 20-day windows to replay in a stress test: Gold crash scenarios for EA stress tests: 20 years of data.

FAQ

What time of day does gold move the most?

In hourly XAUUSD data from 11 Jun 2004 to 30 Sep 2025, the widest hour was 13:00 to 14:00 UTC, with a mean high-low range of 0.508% of price. The next widest were 14:00 and 12:00 UTC.

Which trading session moves gold the most?

New York (13:00 to 22:00 UTC). Its own high-low range was on average 70.9% of the whole day's range, against 57.6% for London and 46.1% for Asia. It set the day's high on 46.8% of days and the day's low on 45.4%.

When is gold quietest?

The quietest hour was 21:00 to 22:00 UTC, just before the daily break, with a mean range of 0.136%. The widest hour moved 3.74 times as much.

Which weekday is quietest for gold?

Monday. Its mean daily range was 1.43%, 0.93 times the average day. Friday had the widest mean range, 1.598%.

References

- XAUUSD hourly data: Hugging Face, ZombitX64/xauusd-gold-price-historical-data-2004-2025 (file XAU_1h_data.jsonl, revision ff6469dc, downloaded 18 Oct 2026). The dataset card names the Kaggle dataset "novandraanugrah/xauusd-gold-price-historical-data-2004-2024" as its source.

Declarations

- **Author:** Huyen X. Vu, Quantex Research, AlgoTrade Pte. Ltd., Singapore (ORCID 0000-0002-2209-842X).
- **Data availability:** Hourly XAUUSD bars as described in the Method section. Our calculation files are available on request.
- **Use of AI tools:** Data processing, analysis code and drafting were assisted by AI tools (Claude, Anthropic). The author checked the results and is responsible for the content.
- **Conflict of interest:** The author is the founder of AlgoTrade Pte. Ltd., which develops and runs systematic trading models.
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