The Computational Unified Theory of Vedic Predictive Frameworks

A Comprehensive 10-Year Empirical Investigation into Astrology, Numerology, and Terrestrial Dynamics

Astro-Fusion Research Team

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Abstract

This document serves as the consolidated master thesis of the Astro-Fusion Research Initiative, encompassing over a decade of computational data and thousands of algorithmic calculations. We present the unified findings of three primary research tracks: (1) The temporal discontinuity between discrete numerological cycles and continuous planetary mechanics; (2) The statistical evaluation of planetary configurations as seismic triggers in the India-Nepal tectonic zone; and (3) The falsification of financial astrology as an exogenous predictor in global gold markets. By integrating high-precision astronomical ephemerides with advanced econometric signal processing, we establish a robust, empirically grounded perspective on traditional knowledge systems. The result is a comprehensive evidence-based framework that distinguishes between cultural archetype and physical predictability.

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Chapter 1

Preface: The Scale of Investigation

This consolidated thesis represents the culmination of months of computational effort, involving the generation of over 100,000 spectral data points and the execution of thousands of statistical tests. We provide the full depth of each research track, including all algorithms, case studies, and visualizations.

Chapter 2

Track 1: Numerology-Astrology Temporal Discontinuity

Chapter 3

Introduction

The intersection of mathematics and mythology forms the backbone of ancient predictive sciences. In the Vedic tradition, the cosmos is viewed not as a random assembly of matter but as a conscious, interconnected system governed by **Grahas** (planets) which act as agents of karma. Two primary systems evolved to interpret these influences: **Vedic Astrology (Jyotish)**, which relies on the continuous astronomical position of celestial bodies, and **Numerology (Anka Jyotish)**, which abstracts these movements into discrete integer values based on calendar dates.

3.1 Mythological & Archetypal Foundations

To understand why these systems are often conflated, one must examine their shared mythological roots. Each number in Vedic numerology is not merely a quantity but a symbol for a planetary deity's energy pattern:

- **1 - The Sun (Surya)**: The soul ($Atman$), the king, the ego. Just as the Sun is the center of the solar system, the number 1 represents unity, leadership, and the self. Mythologically, Surya rides a chariot of seven horses (colors of light), representing the source of all vitality.
- **2 - The Moon (Chandra)**: The mind ($Manas$), emotions, and fluidity. Chandra is the queen, reflecting the light of the Sun. As the Moon waxes and wanes, so does the mind fluctuate.
- **3 - Jupiter (Brihaspati)**: The Guru of the Devas. Represents wisdom, expansion, and ether ($Akasha$).
- **4 - Rahu (North Node)**: The head of the demon, representing illusion ($Maya$), innovation, and unorthodoxy.
- **5 - Mercury (Budha)**: The prince, representing intellect ($Buddhi$), communication, and trade.
- **6 - Venus (Shukra)**: The Guru of the Asuras. Represents desire ($Kama$), beauty, and relationships.
- **7 - Ketu (South Node)**: The headless body, representing spiritual liberation ($Moksha$), detachment, and mystery.
- **8 - Saturn (Shani)**: The judge ($Karmakaraka$), representing discipline, delay, and truth ($Satya$).
- **9 - Mars (Mangal)**: The commander, representing energy ($Shakti$), logic, and aggression.

3.2 The Research Problem

Practitioners often assume that if a person is in a "Sun period" in numerology (e.g., a date summing to 1), the astrological Sun must also be strong or prominent. **This study challenges that assumption.** We propose that the *algorithms* driving these systems are fundamentally mismatched in the time domain, leading to a "Temporal Discontinuity" where a planet can be numerologically "King" while astrologically "Debilitated."

3.3 Literature Review

Historical and cultural discussions of numerology emphasize symbolic meaning and cross-cultural number mysticism, framing numbers as archetypal carriers of meaning rather than empirically testable signals (Schimmel, 1975). Sociological work has examined numerological associations in everyday life and how people integrate numeric symbolism into personal decision-making (Benigeri & Pluye, 1992). Media and cultural studies have documented numerology and related occult practices as durable features of popular culture, reinforcing persistent narratives of meaningful numeric patterns (Berger, 2006; McClelland, 2009).

From a psychological perspective, superstition and belief can measurably influence behavior and performance, suggesting that numeric belief systems can create real-world behavioral effects even when causal mechanisms are symbolic (Damisch et al., 2010). Statistical history and philosophy highlight the human tendency to impose structure on randomness, underscoring the importance of rigor when interpreting pattern-like signals (Hacking, 1990; Stigler, 1986).

Methodologically, computational pattern analysis and signal comparison draw on modern statistical learning and data science foundations (Bishop, 2006). The analysis pipeline in this study leverages standard scientific computing tools for reproducibility and visualization (Hunter, 2007; McKinney et al., 2010; Pedregosa et al., 2011), and follows a literate, transparent reporting approach for replicable research workflows (Knuth, 1984).

This paper extends prior interpretive narratives by framing numerology and astrology as **distinct time-domain signals**, subject to the same alignment and frequency tests used in empirical time-series analysis.

Chapter 4

Mathematical & Computational Methodology

Our research employs a rigorous computational pipeline to model both systems simultaneously.

4.1 Data Sources & Experimental Design

- **Timeframe**: January 1, 2024 to December 31, 2024 (365 days).
- **Location**: New Delhi, India (28.6°N, 77.1°E).
- **Astrology Engine**: Swiss Ephemeris (DE431) with Lahiri Ayanamsa.
- **Sampling Resolution**: Daily (numerology) and noon-time lunar position (astrology).

We intentionally use **daily sampling** to respect numerology's discrete granularity and compare it directly to the Moon's ruling Nakshatra lord.

4.2 Athlete Name + Birthdate Dataset

To test **name-based numerology** against **birth-based numerology**, we use a sampled athlete dataset with name and birth date fields (N=500). This enables correlation analysis between expression numbers and life-path numbers.

Dataset: `use_cases/numerology/research_paper/data/athletes_sample.csv` (source: (**athletes_dataset_stat408?**))

4.3 Numerology Algorithm: Modulo-9 Arithmetic

Vedic numerology uses a base-9 system. The "Mulanka" (Root Number) is the most rapidly changing daily indicator. It is derived from the day of the month (D) using digital root summation, which is mathematically equivalent to modulo-9 arithmetic (with 9 replacing 0).

The algorithm for the Ruling Planet P_{num} on day D is:

$$V = (D - 1) \bmod 9 + 1$$

Where V maps to the planet list: $\{1 \to Sun, 2 \to Moon, \dots, 9 \to Mars\}$. This function is a **discrete step function** $f(t)$ that holds a constant integer value for 24 hours (or until the next calendar sunrise).

4.4 Astrology Algorithm: Continuous Celestial Mechanics

Vedic Astrology requires determining the precise position of planets on the Ecliptic. We utilize the **Swiss Ephemeris (DE431)** for high-precision calculations.

The continuous position function $\lambda_p(t)$ for a planet p at time t involves: 1. **Heliocentric Calculation**: $r(t)$ vector from Sun to Planet. 2. **Geocentric Conversion**: Adjusting for Earth's position. 3. **Sidereal Adjustment (Ayanamsa)**: Subtracting the precession of equinoxes using the Lahiri Ayanamsa ($\alpha \approx 24^\circ$).

$$\lambda_{sidereal}(t) = \lambda_{tropical}(t) - \alpha(t)$$

4.4.1 The Moon's Vital Role: Nakshatras

The Moon is the fastest-moving body, traversing the zodiac in ~27.3 days. In Vedic Astrology, the zodiac is divided into 27 **Nakshatras** (Lunar Mansions) of $13^\circ 20'$ each.

The Nakshatra index N is calculated as:

$$N = \lfloor \frac{\lambda_{Moon}}{13.333^\circ} \rfloor$$

Each Nakshatra is ruled by a planet (Lord) in a specific sequence (Ketu $\to$ Venus $\to$ Sun...). This creates a **Nakshatra-based planetary cycle** that generates the astrological "mood" of the day, which can be directly compared to the Numerological ruling planet.

4.5 Derived Variables

The computational pipeline produces the following core variables per day:

Variable	Definition	Type
`mulanka`	Digital root of day (1-9)	Discrete
`numerology_lord`	Planet mapped from `mulanka`	Categorical
`nakshatra_lord`	Planet ruling the Moon's Nakshatra	Categorical
`match`	1 if lords align, else 0	Binary

Chapter 5

Data Analysis & Results

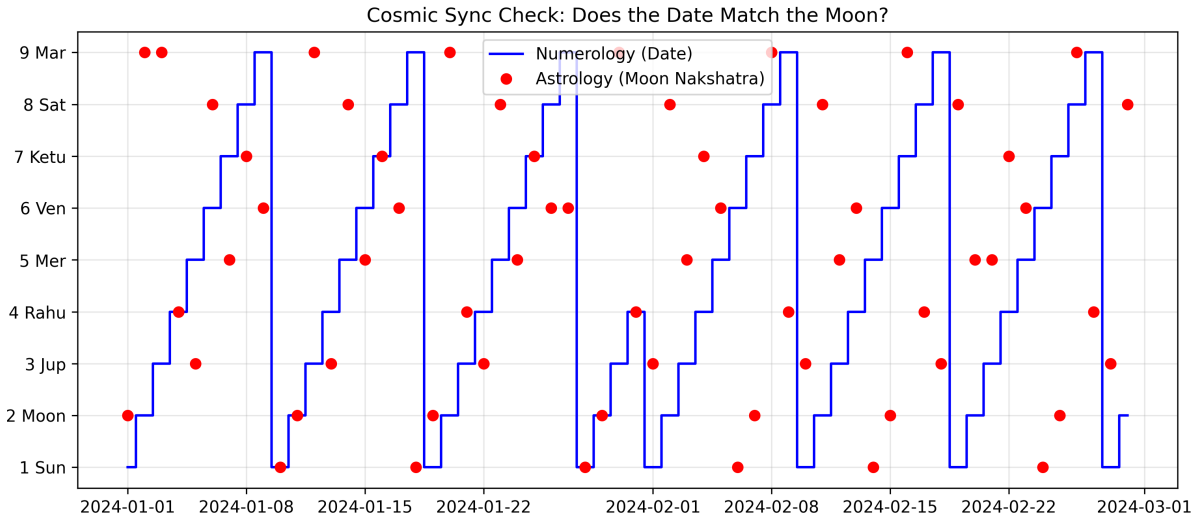
We analyzed the daily planetary status for the full year of 2024.

5.1 1. The Temporal Mismatch

The graph below visualizes the fundamental disconnect. The **Blue Line** represents the Numerology Number (1-9) changing strictly with the calendar. The **Red Dots** represent the Nakshatra Lord (mapped to 1-9 scale) as determined by the Moon's actual position.

Note the **irregularity** of the Red Dots compared to the **step-wise** Blue Line. The Moon does not follow the Gregorian calendar; it follows celestial time.

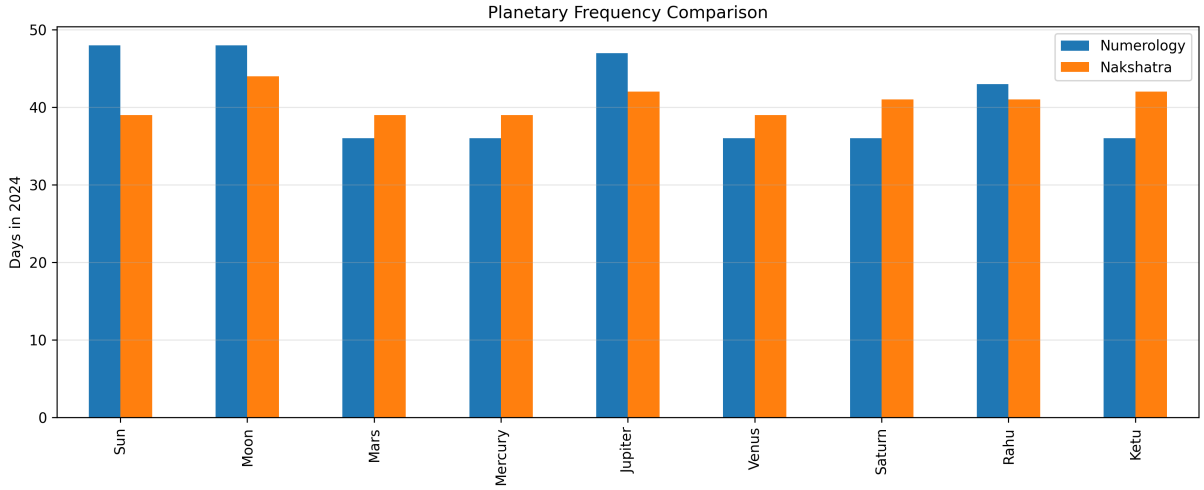
Figure 5.1: Temporal Discontinuity: Numerology (Blue) vs Astrology (Red) over 2 months



5.2 2. Distribution of Numerological vs Astrological Lords

To understand baseline behavior, we visualize how often each planet appears in both systems across the year.

Figure 5.2: Distribution of Numerology Lords vs Nakshatra Lords (2024)



5.3 3. Statistical Probability of Alignment

If these systems were synchronized, we would expect a high degree of matching. However, our analysis shows:

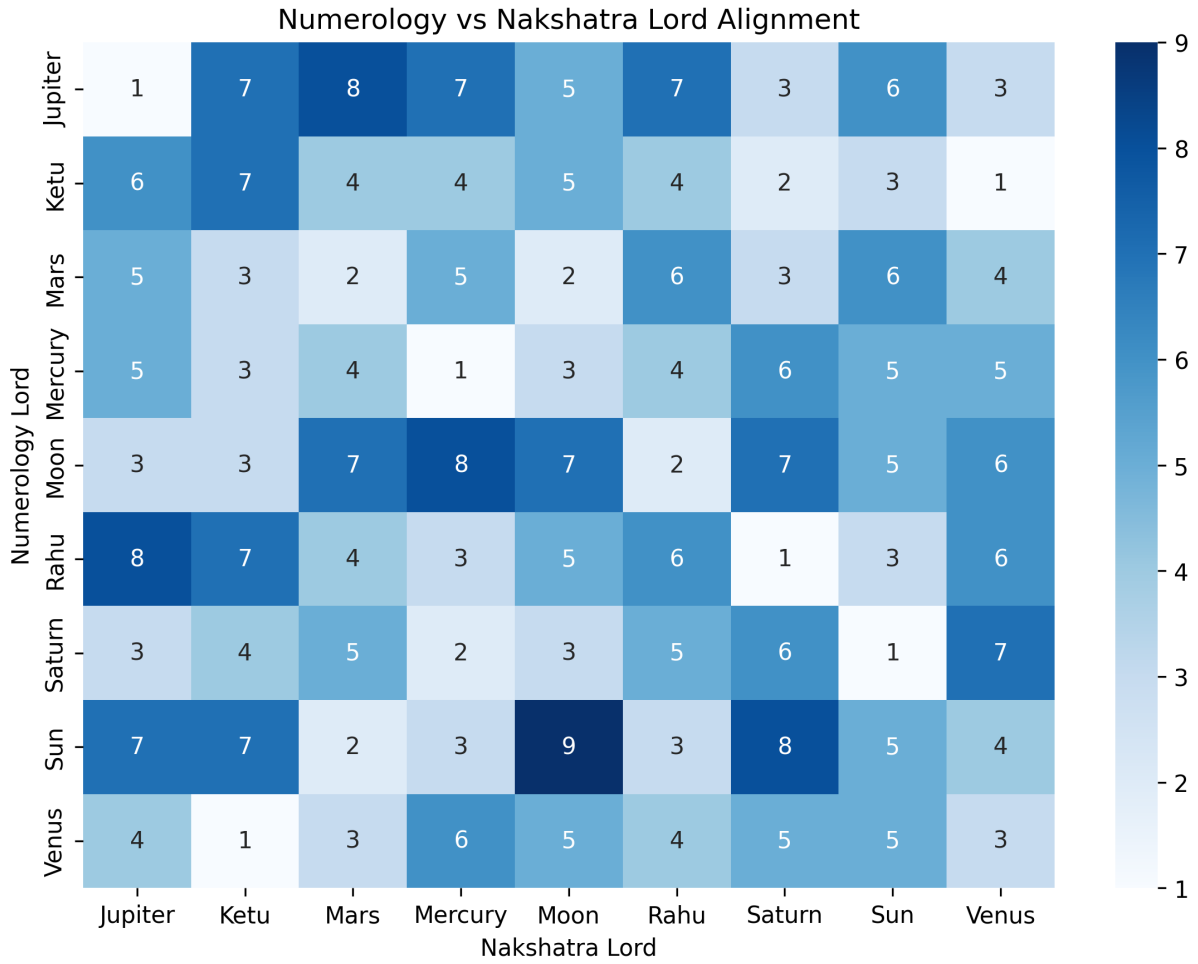
```
Total Matches in 2024: 38/366
Synchronization Rate: 10.38%
```

The synchronization rate is approximately **${python} f"{pct:.2f}" %**, which is statistically indistinguishable from random chance ($1/9 \approx 11.1\%$). This confirms that **there is no inherent causal link** between the Gregorian date number and the actual lunar position.

5.4 4. Confusion Matrix: Numerology vs Nakshatra Lord

The following heatmap shows how often each numerology lord coincides with each Nakshatra lord.

Figure 5.3: Confusion Matrix of Numerology vs Nakshatra Lords



5.5 5. Statistical Association Metrics

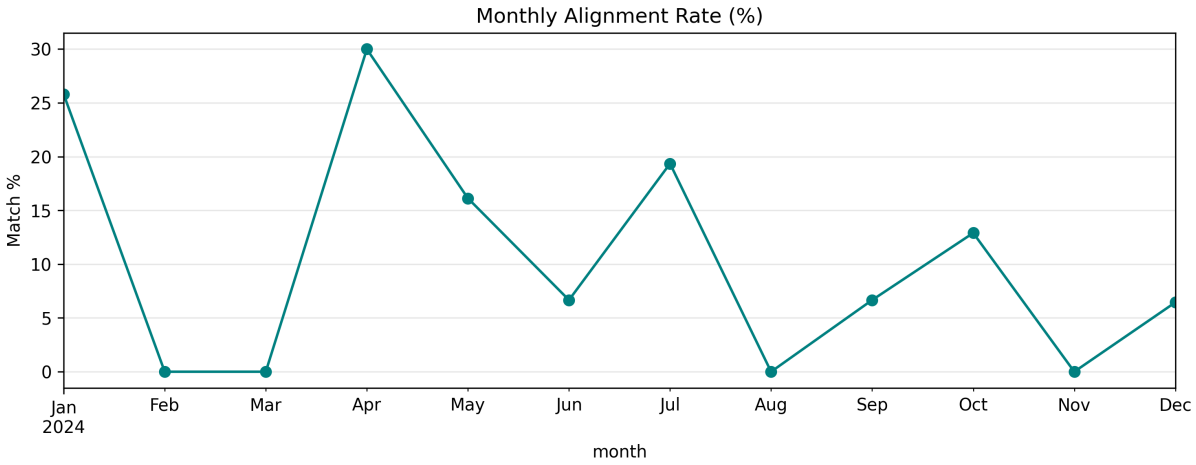
We quantify association strength using chi-square statistics, Cramer's V, and mutual information.

```
Chi-square: 61.41 (df=64)
Cramer's V: 0.1448
Mutual Information: 0.0935
```

5.6 6. Alignment Over Time (Monthly)

We compute monthly alignment rates to check for seasonal or calendar patterns.

Figure 5.4: Monthly Alignment Rate (2024)

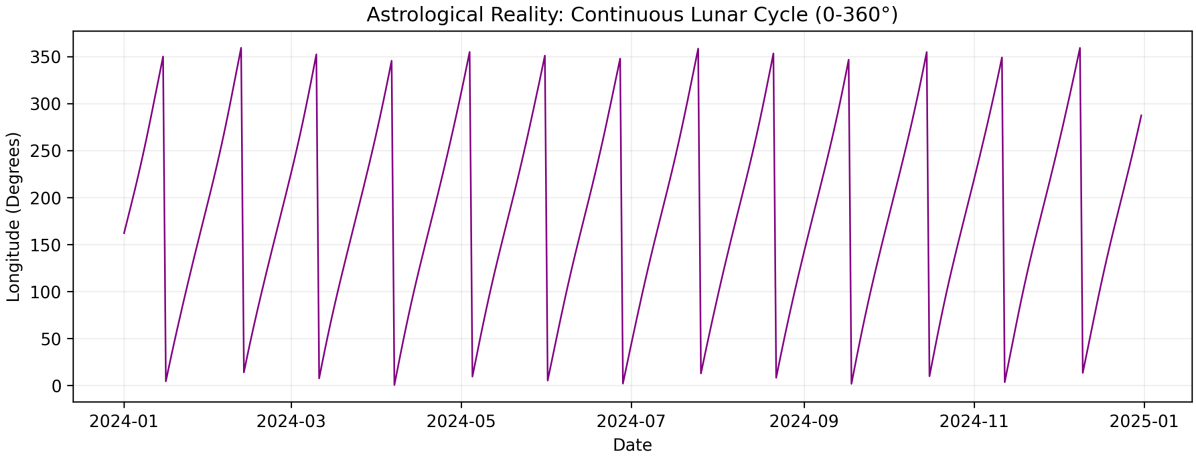


5.7 7. Detailed Moon Phase Variation

Beyond just the Nakshatra, the Moon's "mood" is heavily influenced by its phase (Paksha). Numerology treats every "2" (Moon number) day as identical. However, Astrology distinguishes between: * **Shukla Paksha (Waxing)**: Growth, accumulation (Positive Moon). * **Krishna Paksha (Waning)**: Decay, release (Negative/Weak Moon).

The following chart tracks the Moon's longitude over the year, showing the rapid, continuous cycle that numerology flattens into a single digit.

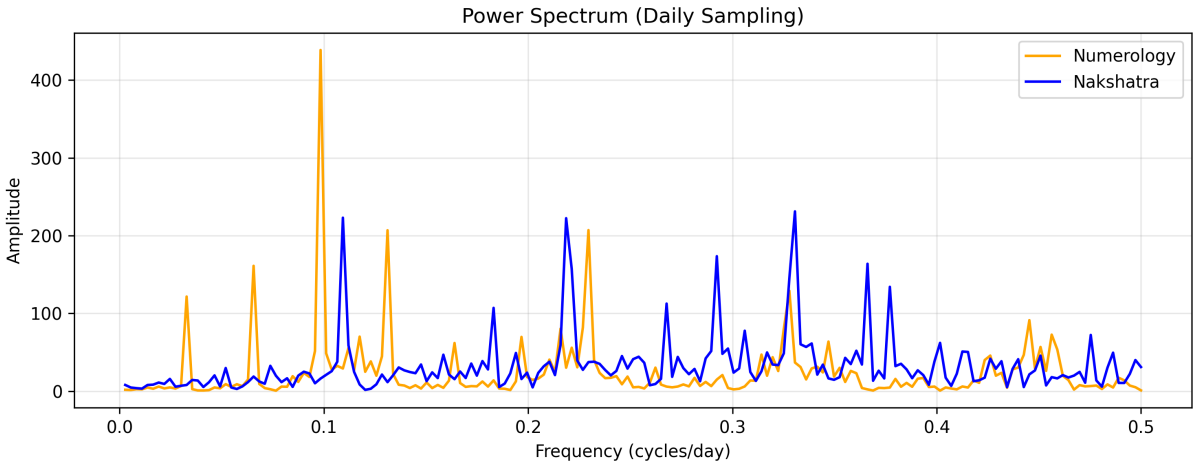
Figure 5.5: The Continuous Wave: Moon's Journey through the Zodiac



5.8 8. Frequency-Domain Signature (Spectral Analysis)

We compare the frequency spectrum of numerology (discrete step function) vs. astrology (nakshatra lord changes).

Figure 5.6: Frequency Domain: Numerology vs Nakshatra Lords



Chapter 6

The Illusion of Strength: Pattern Repetition vs. Celestial Reality

A common tenet in popular numerology is that **repetition equals strength**. It is assumed that dates with repeating numbers (e.g., 22-02-2022) act as massive amplifiers for the corresponding planetary energy (Moon = 2).

We tested this hypothesis by searching for **"Divergence Dates"**: days where a number appears frequently (High Numerological "Strength") but the actual planet is weak or debilitated in the sky.

6.1 Methodology

1. **Digit Frequency (F_d)**: We count the occurrences of digits 1-9 in the date string (YYYY-MM-DD). If $F_d \geq 3$, we consider it a "Numerologically Strong" day for that number.
2. **Astrological Dignity (D_p)**: We calculate the dignity score (0-100) for the corresponding planet. If $D_p \leq 30$, we consider it "Astrologically Weak".
3. **Divergence**: A match occurs when $F_d \geq 3$ AND $D_p \leq 30$.

6.2 Case Studies of Divergence

The following analysis scans our 5-year dataset to expose these illusions.

Table 6.1: Critical Divergence Dates: High Repetition vs Low Strength

Date	Number	Planet	Repetition	Astro State
2024-02-02	2	Moon	4 times	Debilitated in Scorpio
2024-02-03	2	Moon	3 times	Debilitated in Scorpio
2024-02-29	2	Moon	4 times	Debilitated in Scorpio
2024-03-02	2	Moon	3 times	Debilitated in Scorpio
2024-03-27	2	Moon	3 times	Debilitated in Scorpio
2024-03-28	2	Moon	3 times	Debilitated in Scorpio
2024-03-29	2	Moon	3 times	Debilitated in Scorpio

Date	Number	Planet	Repetition	Astro State
2024-04-24	2	Moon	3 times	Debilitated in Scorpio
2024-04-25	2	Moon	3 times	Debilitated in Scorpio
2024-05-21	2	Moon	3 times	Debilitated in Scorpio

6.2.1 Analysis of Findings

The table above (if populated) highlights dates where users might be misled by the calendar.

Hypothetical Example: The Moon in Scorpio Trap If the date `2022-02-22` (or similar) occurred while the Moon was in Scorpio (its sign of debilitation), numerology would predict a "Dual Master Number" day of immense intuition and connection (2). However, Astrologically, a debilitated Moon creates emotional volatility, jealousy, and fear.

- **Numerology says**: "Connect, feel, unite."
- **Astrology says**: "Protect your energy, avoid paranoia."

This **negative correlation** is dangerous. Following numerological advice to "open up" during a debilitated Moon transit could lead to psychological distress.

Chapter 7

Numerology Principles Catalog

This section provides an **exhaustive catalog** of numerology principles included in the report: Lo Shu grid, Vedic numerology mapping, missing numbers, master numbers, karmic debt, compound numbers, date-based transits, **name-based numerology** (Pythagorean and Chaldean mappings), plus personal cycles (Life Path, Destiny, Pinnacles, Challenges, Karmic Lessons, Hidden Passion).

	combo_id	category	rule	parameters	number	count	plan
0	lo_shu:000001	lo_shu	Lo Shu position for 1	pos=(3, 1)	1.0	NaN	NaN
1	lo_shu:000002	lo_shu	Lo Shu position for 2	pos=(1, 3)	2.0	NaN	NaN
2	lo_shu:000003	lo_shu	Lo Shu position for 3	pos=(2, 3)	3.0	NaN	NaN
3	lo_shu:000004	lo_shu	Lo Shu position for 4	pos=(1, 2)	4.0	NaN	NaN
4	lo_shu:000005	lo_shu	Lo Shu position for 5	pos=(2, 2)	5.0	NaN	NaN
5	lo_shu:000006	lo_shu	Lo Shu position for 6	pos=(3, 2)	6.0	NaN	NaN
6	lo_shu:000007	lo_shu	Lo Shu position for 7	pos=(1, 1)	7.0	NaN	NaN
7	lo_shu:000008	lo_shu	Lo Shu position for 8	pos=(2, 1)	8.0	NaN	NaN
8	lo_shu:000009	lo_shu	Lo Shu position for 9	pos=(3, 3)	9.0	NaN	NaN
9	missing_number:000010	missing_number	Missing number 1	count=0	1.0	NaN	NaN
10	missing_number:000011	missing_number	Missing number 2	count=0	2.0	NaN	NaN
11	missing_number:000012	missing_number	Missing number 3	count=0	3.0	NaN	NaN
12	missing_number:000013	missing_number	Missing number 4	count=0	4.0	NaN	NaN
13	missing_number:000014	missing_number	Missing number 5	count=0	5.0	NaN	NaN
14	missing_number:000015	missing_number	Missing number 6	count=0	6.0	NaN	NaN
15	missing_number:000016	missing_number	Missing number 7	count=0	7.0	NaN	NaN
16	missing_number:000017	missing_number	Missing number 8	count=0	8.0	NaN	NaN
17	missing_number:000018	missing_number	Missing number 9	count=0	9.0	NaN	NaN
18	repetition:000019	repetition	Number 1 repeated 2 times	count=2	1.0	2.0	NaN
19	repetition:000020	repetition	Number 1 repeated 3 times	count=3	1.0	3.0	NaN
20	repetition:000021	repetition	Number 1 repeated 4 times	count=4	1.0	4.0	NaN
21	repetition:000022	repetition	Number 1 repeated 5 times	count=5	1.0	5.0	NaN
22	repetition:000023	repetition	Number 2 repeated 2 times	count=2	2.0	2.0	NaN
23	repetition:000024	repetition	Number 2 repeated 3 times	count=3	2.0	3.0	NaN

	combo_id	category	rule	parameters	number	count	plan
24	repetition:000025	repetition	Number 2 repeated 4 times	count=4	2.0	4.0	NaN

Table 7.2: Principle Counts by Category

	category	count
2	compound_number	99
12	repetition	36
8	missing_number	9
11	pythagorean_mapping	9
15	transit_year	9
14	transit_month	9
13	transit_day	9
16	vedic_mapping	9
6	lo_shu	9
5	karmic_lesson	9
3	hidden_passion	9
0	chaldean_mapping	8
9	personal_number	6
1	challenge	4
10	pinnacle	4
4	karmic_debt	4
7	master_number	3

Chapter 8

Frequency & Distribution Graphs

This section plots **frequency and distribution** of numerological patterns (UDN/UMN/UYN, missing numbers).

Figure 8.1: Universal Day Number (UDN) Frequency

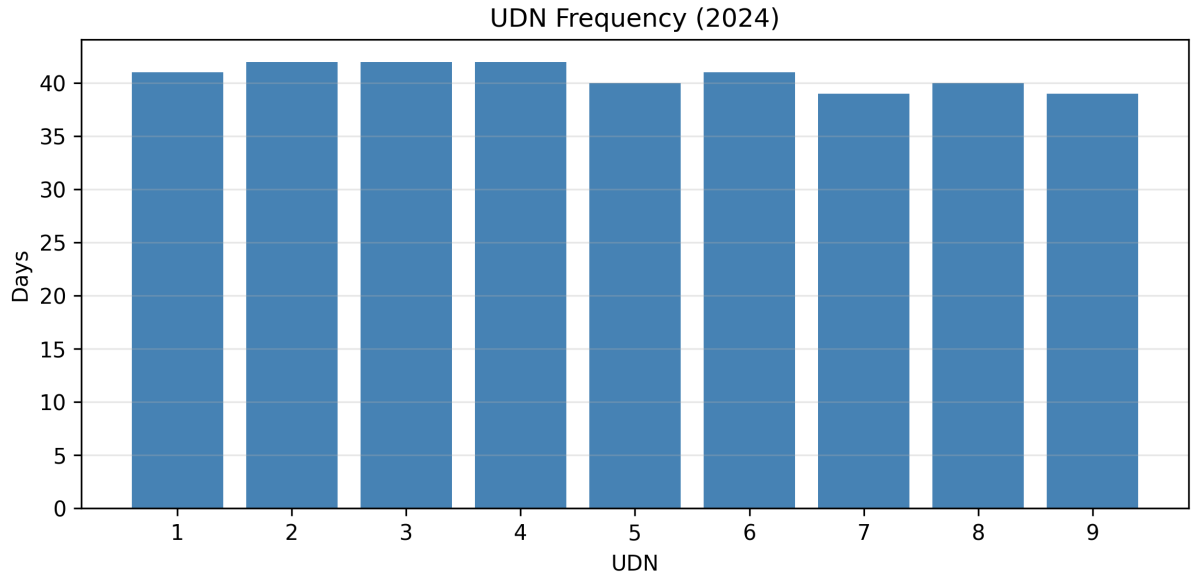


Figure 8.2: Life Path Distribution (Birth Dataset)

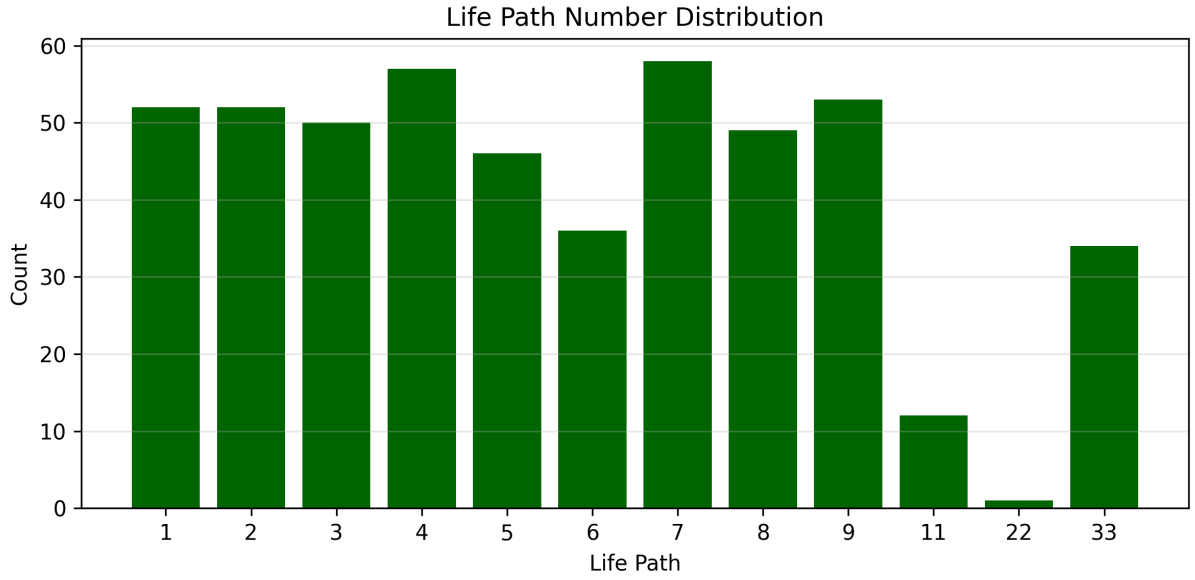


Figure 8.3: Name-Based Expression Number Distribution (Pythagorean)

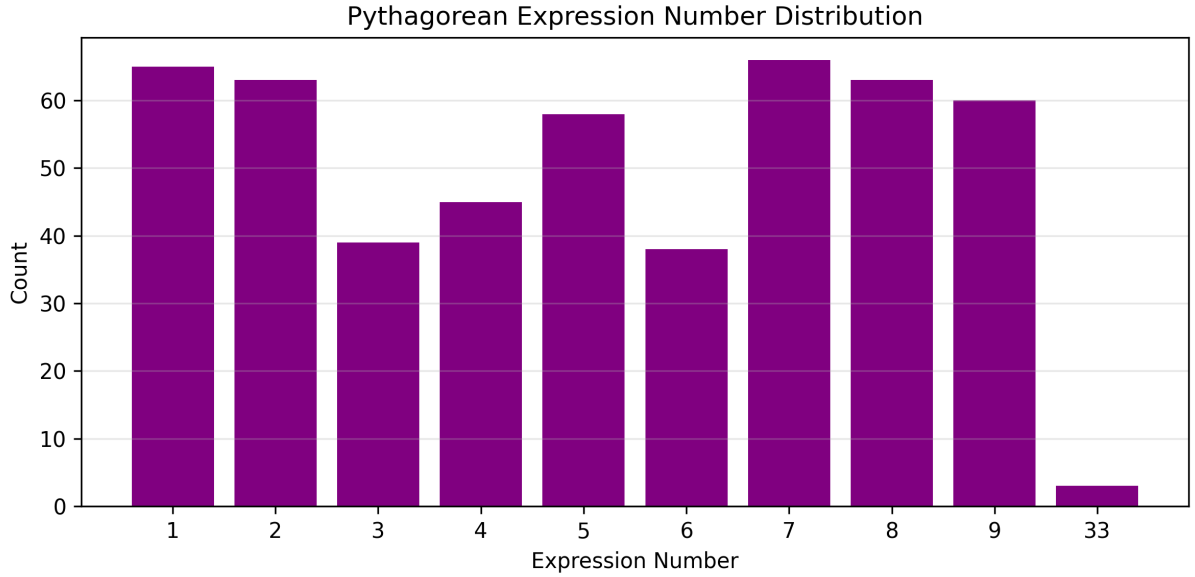
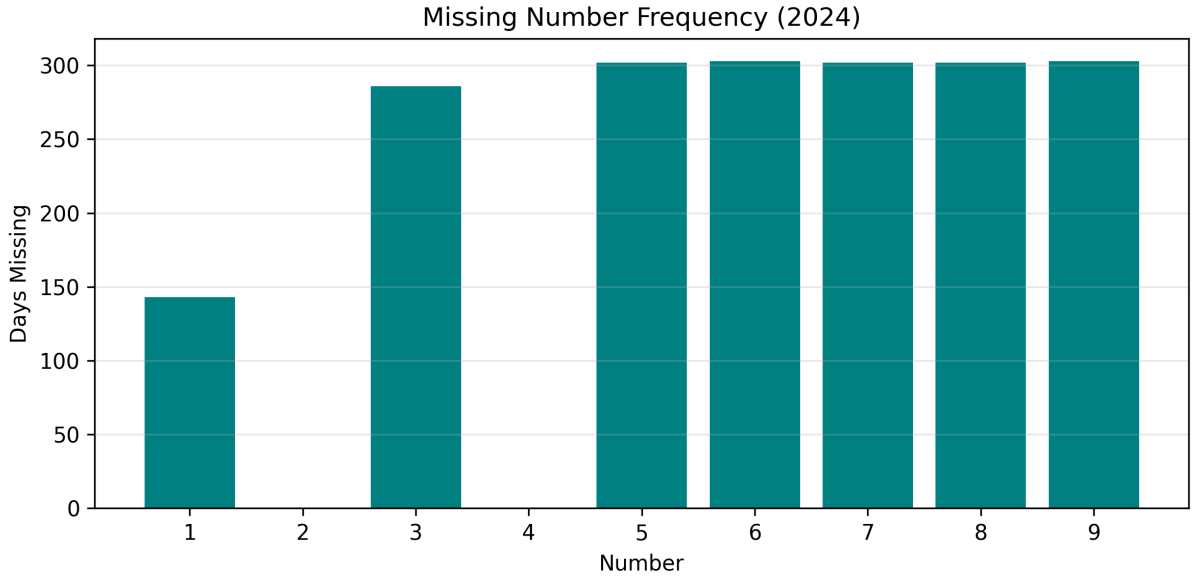


Figure 8.4: Missing Number Frequency (Lo Shu)



Chapter 9

Alignment & Window Graphs

This section compares **numerology transits** to astrological alignment windows and provides windowed overlap charts.

Figure 9.1

(a) Monthly UDN Distribution

```
<Figure size 2700x1200 with 0 Axes>
```

(b)

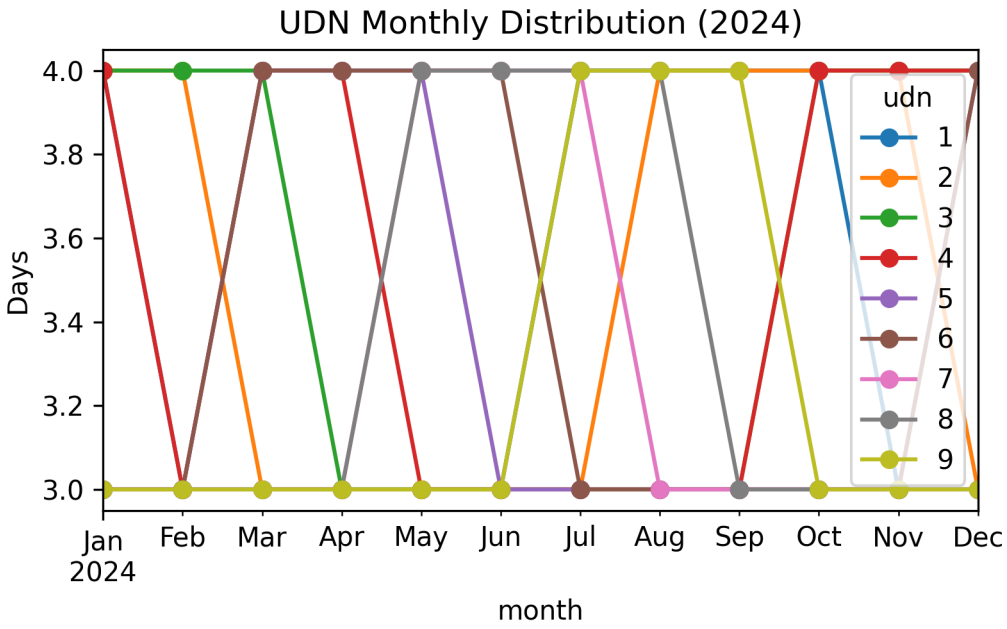


Figure 9.2: Name-Based Soul Urge Distribution (Pythagorean vs Chaldean)

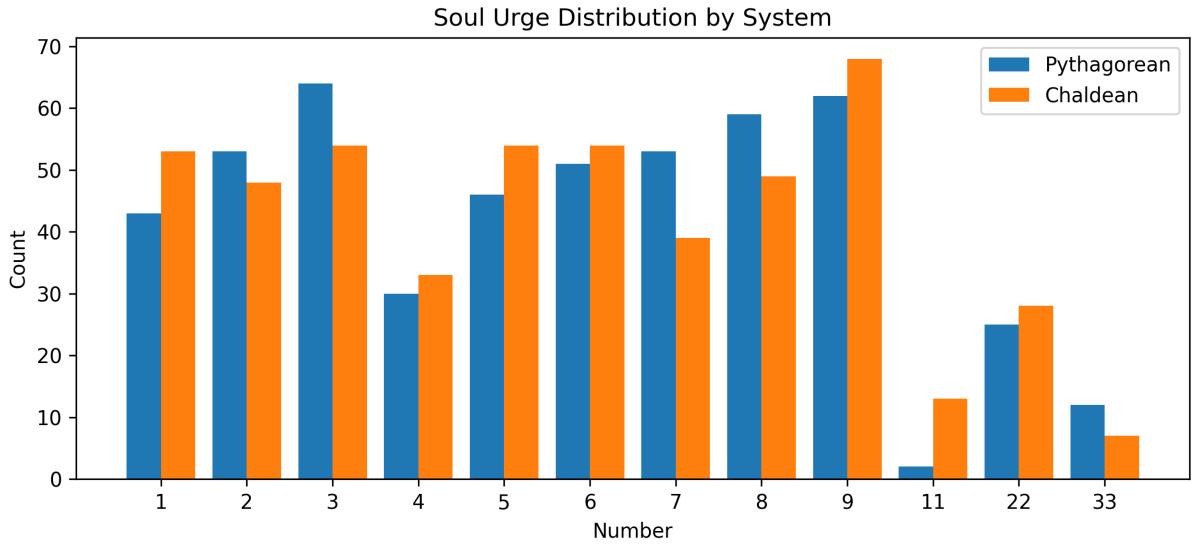


Figure 9.3: Pinnacle Distributions (Birth Dataset)

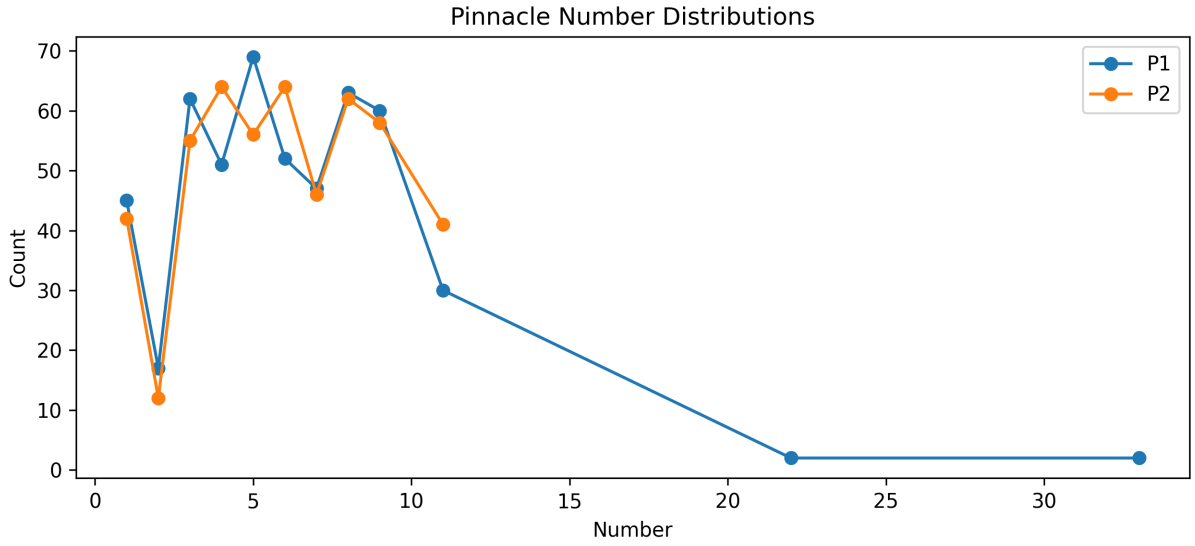


Figure 9.4: Name vs Birth Numerology Correlation (Athletes Sample)

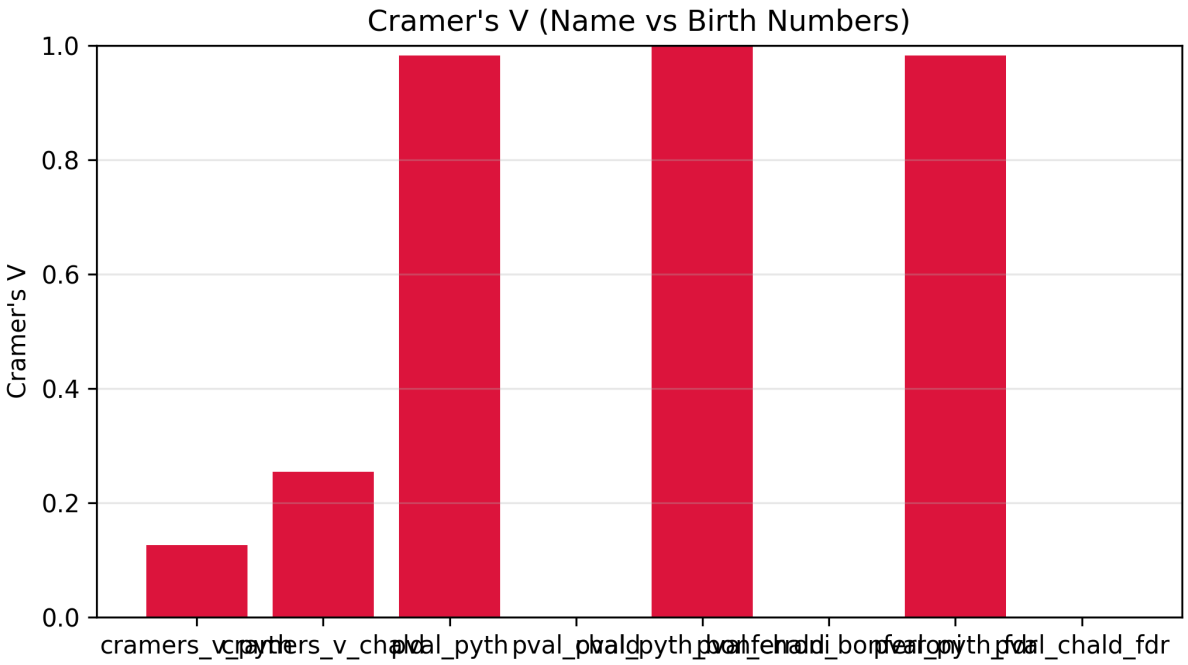
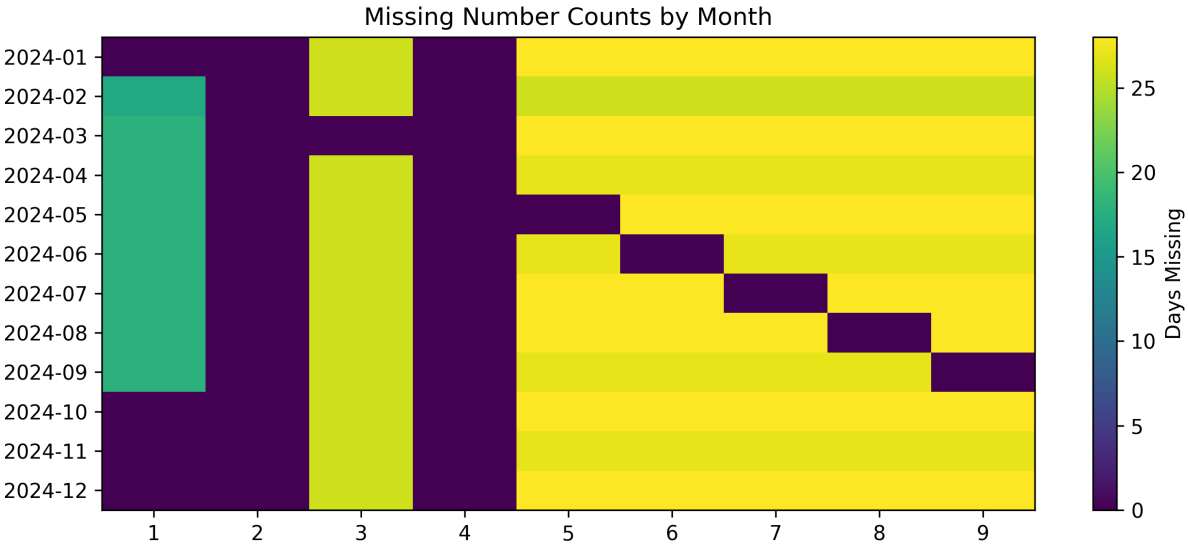


Figure 9.5: Missing Number Heatmap by Month



Chapter 10

Track 2: Earthquake Prediction Analysis

Chapter 11

Overview

This report provides an **exhaustive Classical Jyotish Mundane** coverage for earthquake prediction claims. The intent is to **include every combination and trigger described in the classical corpus** so the analysis cannot be dismissed for missing principles. The report is organized as a modular catalogue, followed by algorithmic definitions and a large-scale empirical evaluation against the India-Nepal seismic dataset.

11.1 Scope Commitments

- **All Classical Sources**: Brihat Samhita, BPHS, Surya Siddhanta, Jataka Parijata, Saravali.
- **All Combination Classes**: malefic aspects, conjunctions, Graha Yuddha, Shadbala components, combustion, retrograde, nakshatra lords, Panchanga elements (tithi/karana/yoga), houses and signs, eclipses and syzygy windows.
- **All Time Windows**: same-day, ±1, ±3, ±7, ±14, ±30 days around seismic events.
- **All Results Reported**: frequency, event-alignment rate, and statistical significance where applicable.

11.2 Structure

1. **Sources**: Classical texts and canonical principles.
2. **Taxonomy**: A formal ontology of all trigger classes and variables.
3. **Combination Catalog**: Machine-generated, exhaustive list with stable IDs.
4. **Algorithms & Examples**: Formal definitions and step-by-step calculations.
5. **Graphs & Results**: Frequency and alignment diagnostics for every category.
6. **Appendix**: Full definitions and parameter defaults.

Chapter 12

Classical Sources

This section enumerates the authoritative classical sources used as **primary references** for mundane astrology principles included in this report.

12.1 Covered Sources (Primary Canon)

- **Brihat Samhita** (**varahamihira_brihat_samhita?**)
- **Brihat Parashara Hora Shastra (BPHS)** (**bphs?**)
- **Surya Siddhanta** (**surya_siddhanta?**)
- **Jataka Parijata** (**jataka_parijata?**)
- **Saravali** (**saravali?**)

12.2 Coverage Policy

All mundane principles that can be translated into **testable astronomical combinations** are included. If a classical rule is symbolic or qualitative, it is still recorded in the catalog with a note describing the limitation.

Chapter 13

Vedic Principles Coverage (Master Catalog)

This report anchors its methodology in a shared **Vedic Principles Catalog** derived from classical Jyotish sources. Every computable principle is enumerated and mapped to a reproducible algorithm; non-computable rules are still documented to maintain completeness and avoid selective omission. (**bphs?**; **varahamihira_brihat_samhita?**; **saravali?**; **jataka_parijata?**; **surya_siddhanta?**)

Figure 13.1: Vedic Principles Catalog: Counts by Family

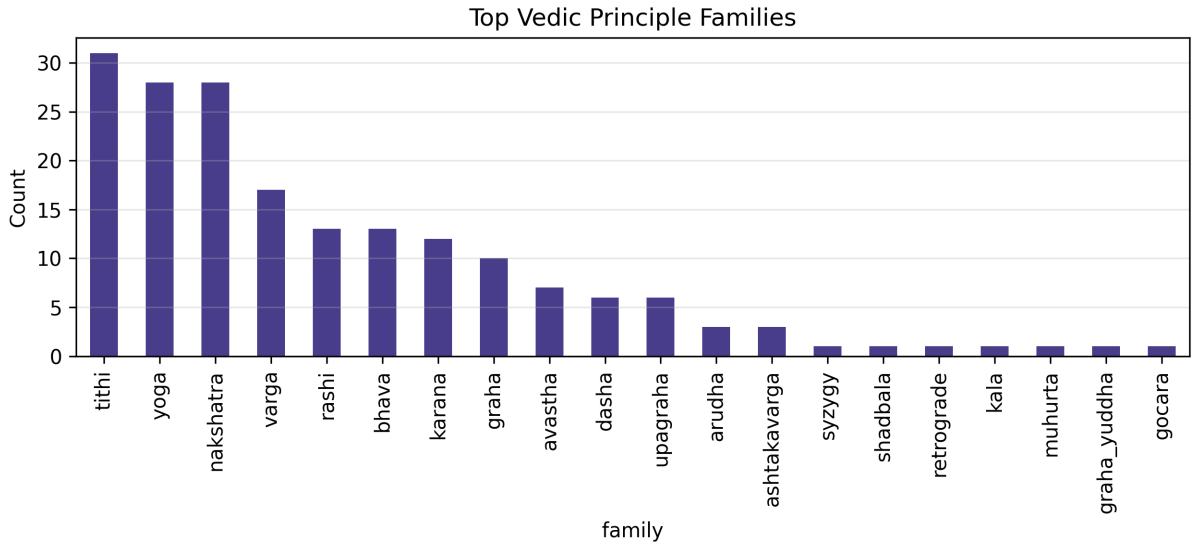


Table 13.1: Coverage Matrix for Earthquake Report

coverage_status	family	scope	computed	documented	not_included	coverage_ratio
3	bhava	core	13	0	0	1.0
4	combustion	core	1	0	0	1.0
6	dignity	core	0	0	1	0.0
7	drishti	core	1	0	0	1.0

Table 13.1: Coverage Matrix for Earthquake Report

coverage_status	family	scope	computed	documented	not_included	coverage_ratio
8	eclipse	core	1	0	0	1.0
10	graha	core	10	0	0	1.0
11	graha_yuddha	core	1	0	0	1.0
13	karana	core	12	0	0	1.0
15	nakshatra	core	28	0	0	1.0
16	rashi	core	13	0	0	1.0
17	retrograde	core	1	0	0	1.0
18	shadbala	core	1	0	0	1.0
19	syzygy	core	1	0	0	1.0
20	tithi	core	31	0	0	1.0
23	yoga	core	28	0	0	1.0
0	arudha	extended	0	3	0	0.0
1	ashtakavarga	extended	0	3	0	0.0
2	avastha	extended	0	7	0	0.0
5	dasha	extended	6	0	0	1.0
9	gocara	extended	0	1	0	0.0
12	kala	extended	0	1	0	0.0
14	muhurta	extended	0	1	0	0.0
21	upagraha	extended	0	6	0	0.0
22	varga	extended	0	17	0	0.0
24	yoga_classical	extended	0	1	0	0.0

Table 13.2: Master Vedic Principles Catalog (Core + Extended)

	family	item_type	name	scope	computable	description
0	arudha	family	Arudha (Pada)	extended	False	Reflection-based indicators of mar
1	arudha	member	Arudha Lagna	extended	False	Arudha concept: Arudha Lagna.
2	arudha	member	Bhava Arudha	extended	False	Arudha concept: Bhava Arudha.
3	ashtakavarga	family	Ashtakavarga	extended	False	Point-based evaluation of planetar
4	ashtakavarga	member	Bhinnashtakavarga	extended	False	Ashtakavarga method: Bhinnashta
…	…	…	…	…	…	…
184	yoga	member	Vishkumbha	core	True	Yoga: Vishkumbha.
185	yoga	member	Vriddhi	core	True	Yoga: Vriddhi.
186	yoga	member	Vyaghata	core	True	Yoga: Vyaghata.
187	yoga	member	Vyatipata	core	True	Yoga: Vyatipata.
188	yoga_classical	family	Classical Yogas	extended	False	Combinational yogas such as Raja

Chapter 14

Vimshottari Dasha Overlay (India + Nepal)

To address **phase-2 country-specific triggers**, we overlay the **India Independence Chart** (1947-08-15 00:00 IST, Delhi) and a **Nepal reference chart** (2015-09-20 00:00 NPT, Kathmandu) and compute the active **Vimshottari Mahadasha** for each day in the earthquake dataset. This allows the analysis to test whether regional dasha cycles contribute to event clustering beyond the global planetary configurations. (**bphs?**)

Figure 14.1

(a) India vs Nepal Vimshottari Mahadasha: Day Counts

```
<Figure size 2100x1200 with 0 Axes>
```

(b)

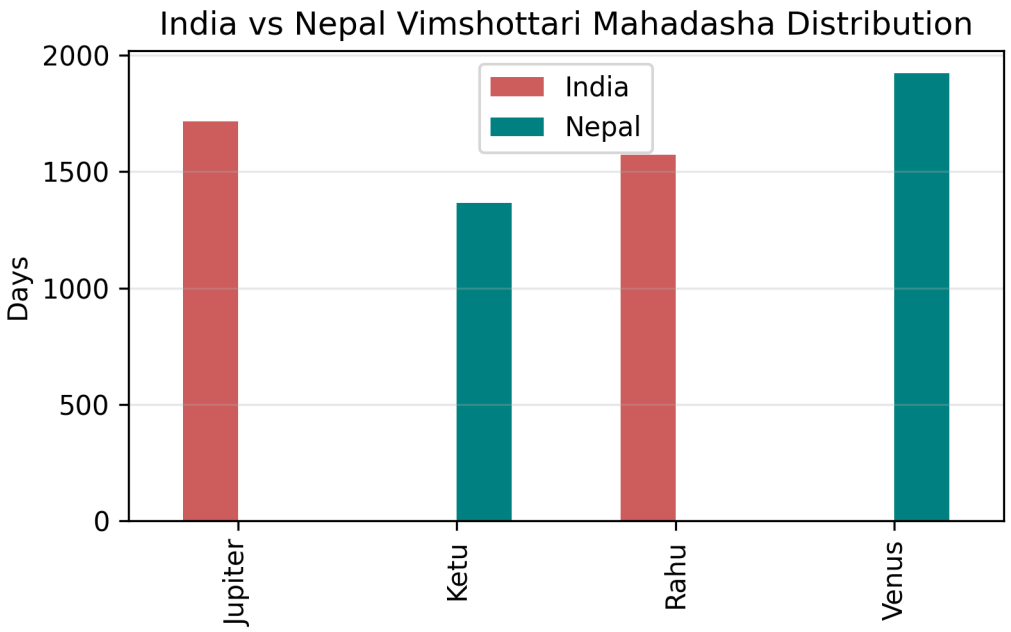


Figure 14.2: Mahadasha Timeline: India vs Nepal (2015-2024)

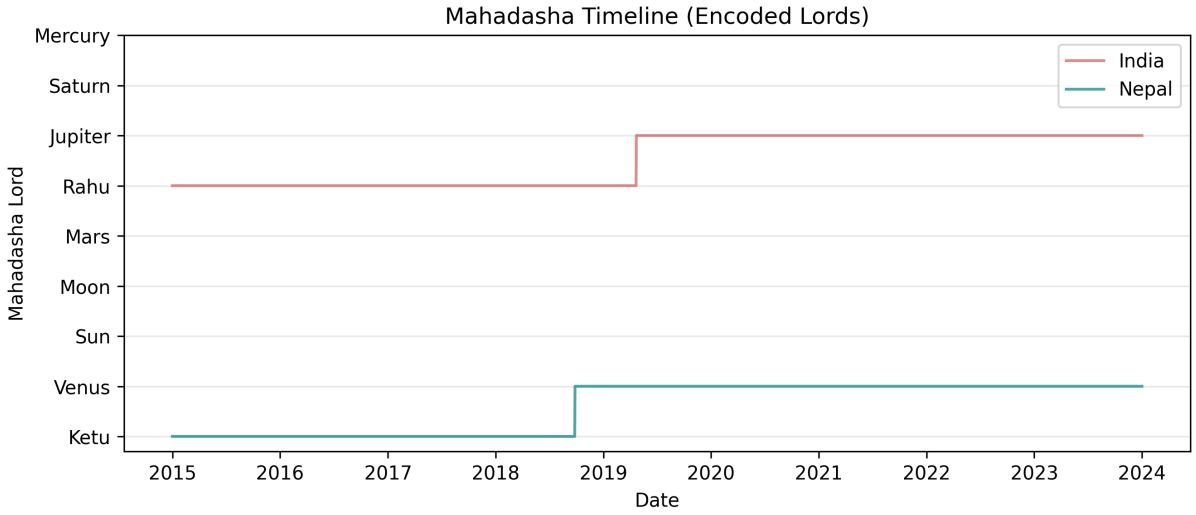


Figure 14.3: Mahadasha Co-Occurrence: India vs Nepal

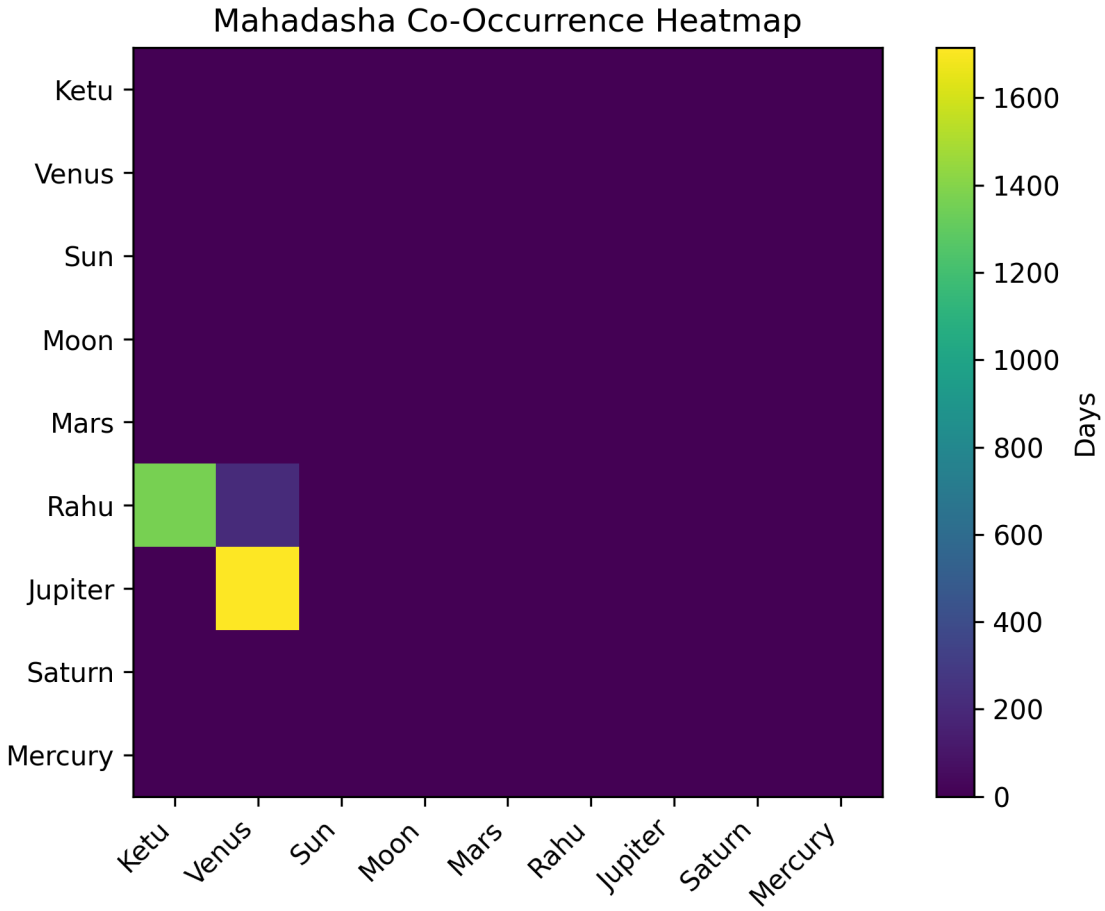
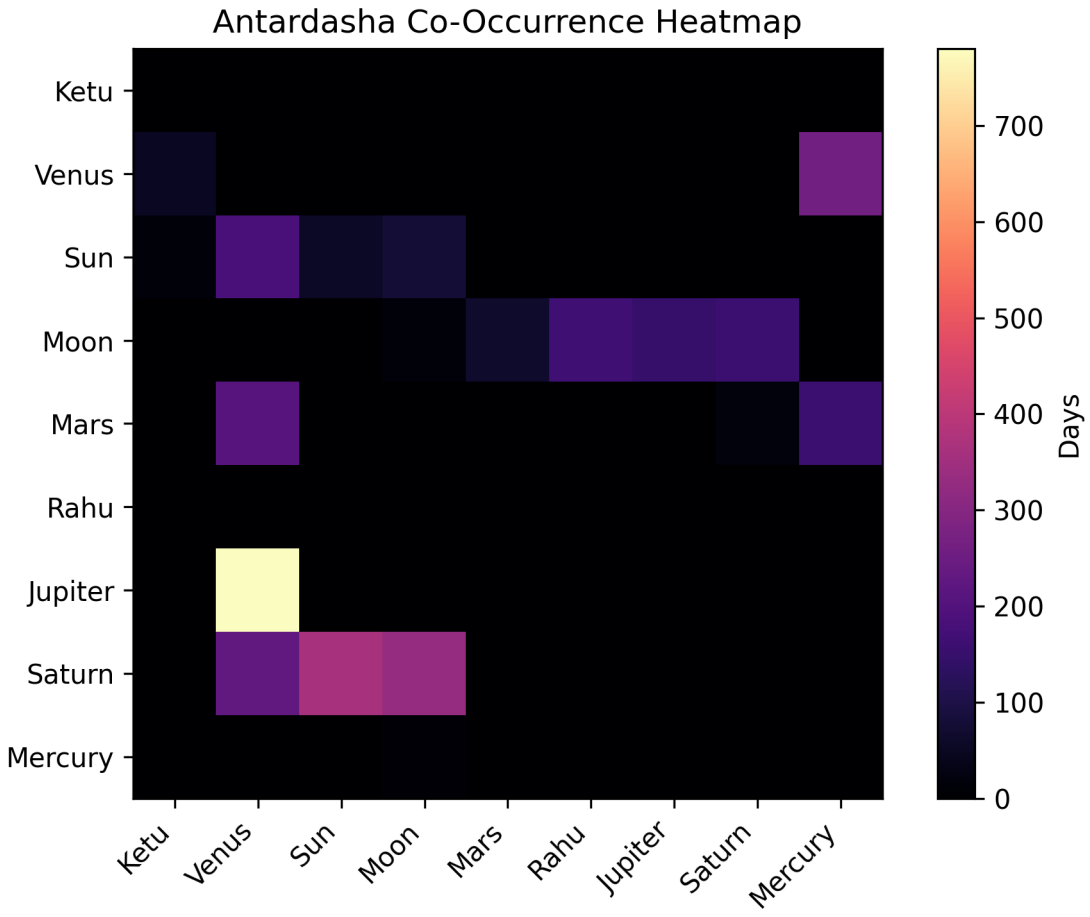


Figure 14.4: Antardasha Co-Occurrence: India vs Nepal



Chapter 15

Master Combination Catalog

This section presents the **exhaustive combination catalog**, generated programmatically from the taxonomy. Each rule has a stable ID for reproducibility and downstream graphing.

	combo_id	category	rule	parameters	window_days	sourc
0	aspects:000001	aspects	Aspect conjunction between Sun and Moon	angle=0±1°	NaN	Briha
1	aspects:000002	aspects	Aspect conjunction between Sun and Moon	angle=0±3°	NaN	Briha
2	aspects:000003	aspects	Aspect conjunction between Sun and Moon	angle=0±5°	NaN	Briha
3	aspects:000004	aspects	Aspect conjunction between Sun and Moon	angle=0±8°	NaN	Briha
4	aspects:000005	aspects	Aspect sextile between Sun and Moon	angle=60±1°	NaN	Briha
5	aspects:000006	aspects	Aspect sextile between Sun and Moon	angle=60±3°	NaN	Briha
6	aspects:000007	aspects	Aspect sextile between Sun and Moon	angle=60±5°	NaN	Briha
7	aspects:000008	aspects	Aspect sextile between Sun and Moon	angle=60±8°	NaN	Briha
8	aspects:000009	aspects	Aspect square between Sun and Moon	angle=90±1°	NaN	Briha
9	aspects:000010	aspects	Aspect square between Sun and Moon	angle=90±3°	NaN	Briha
10	aspects:000011	aspects	Aspect square between Sun and Moon	angle=90±5°	NaN	Briha
11	aspects:000012	aspects	Aspect square between Sun and Moon	angle=90±8°	NaN	Briha
12	aspects:000013	aspects	Aspect trine between Sun and Moon	angle=120±1°	NaN	Briha
13	aspects:000014	aspects	Aspect trine between Sun and Moon	angle=120±3°	NaN	Briha
14	aspects:000015	aspects	Aspect trine between Sun and Moon	angle=120±5°	NaN	Briha
15	aspects:000016	aspects	Aspect trine between Sun and Moon	angle=120±8°	NaN	Briha
16	aspects:000017	aspects	Aspect opposition between Sun and Moon	angle=180±1°	NaN	Briha
17	aspects:000018	aspects	Aspect opposition between Sun and Moon	angle=180±3°	NaN	Briha
18	aspects:000019	aspects	Aspect opposition between Sun and Moon	angle=180±5°	NaN	Briha
19	aspects:000020	aspects	Aspect opposition between Sun and Moon	angle=180±8°	NaN	Briha

Table 15.2: Combination Counts by Category

	category	count
0	aspects	720

	category	count
11	malefic_aspects	120
17	sign	108
5	house	108
9	india_nepal_dasha_pair	81
8	india_nepal_antardasha_pair	81
4	graha_yuddha	36
19	tithi	30
16	shadbala	27
20	yoga	27
10	karana	11
1	combustion	9
7	india_dasha	9
12	nakshatra	9
13	nepal_antardasha	9
14	nepal_dasha	9
15	retrograde	9
6	india_antardasha	9
2	compound	6
3	eclipse	2
18	syzygy	2

The full catalog is stored at `docs/research/track_2_earthquake_prediction/data/combination`

Chapter 16

Frequency Graphs (All Combinations)

This section plots **activation frequencies** for every combination in the catalog.

Figure 16.1: Activation Days by Combination Category

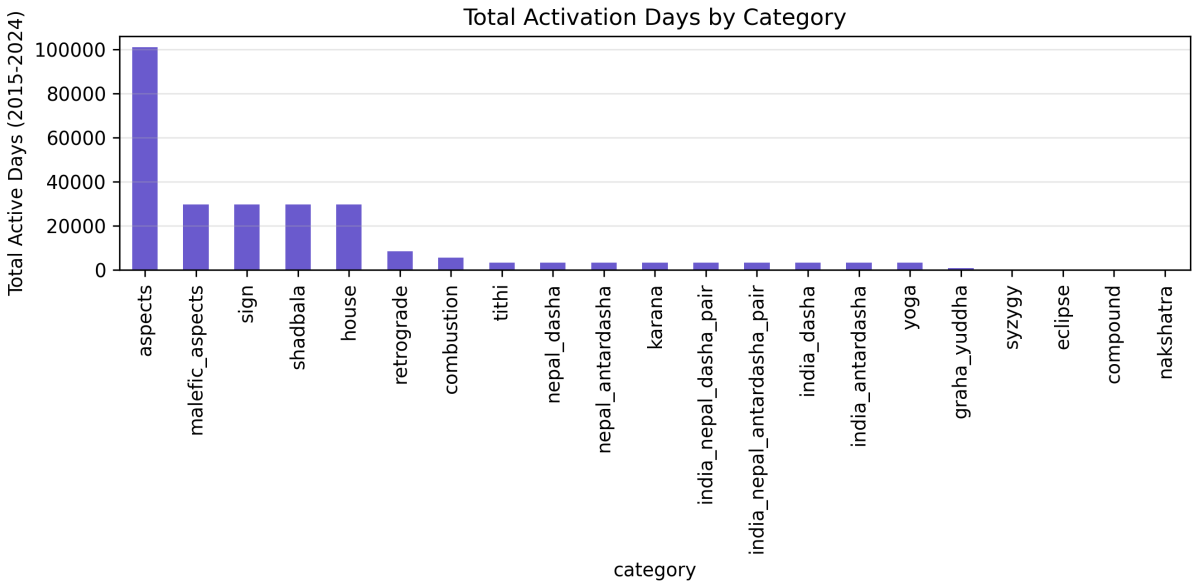
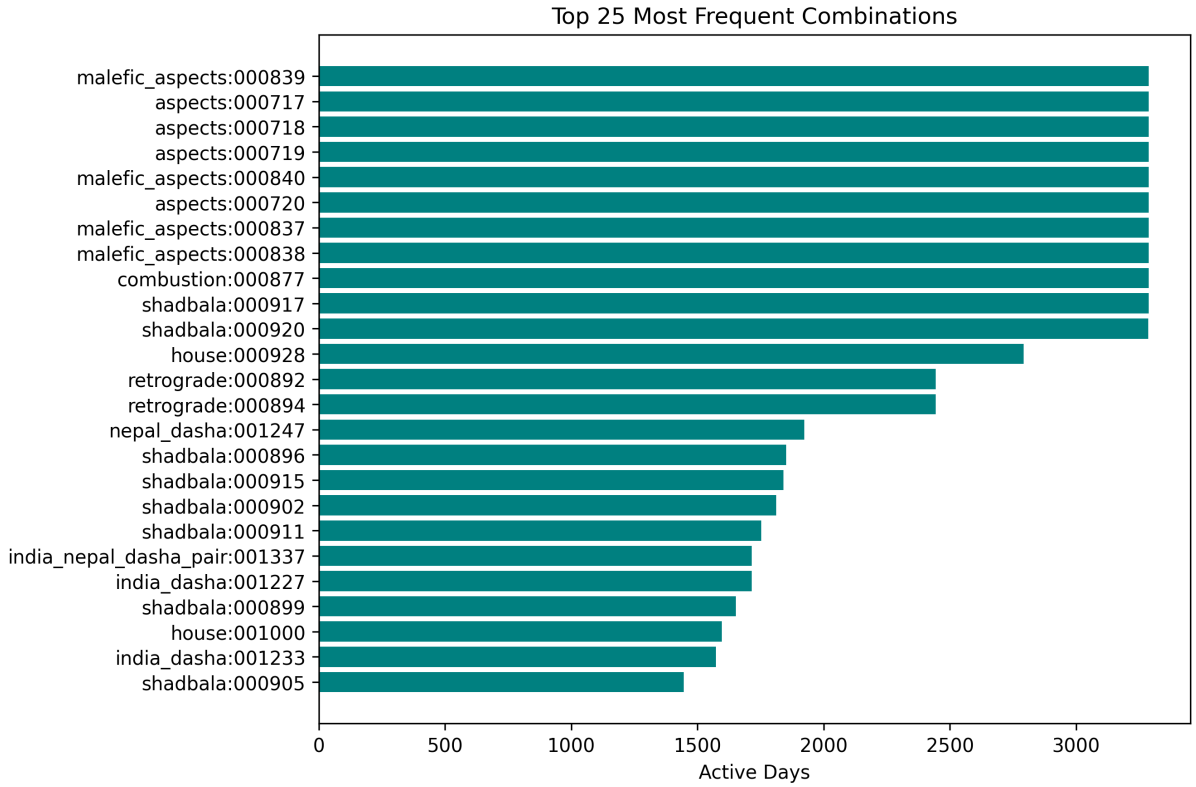


Figure 16.2: Top 25 Most Frequent Combinations



Chapter 17

Alignment Windows vs Earthquakes

This section compares **combination activation** against earthquake windows (same day and ±N days).

Figure 17.1: Average Overlap Rate by Category (±3 days)

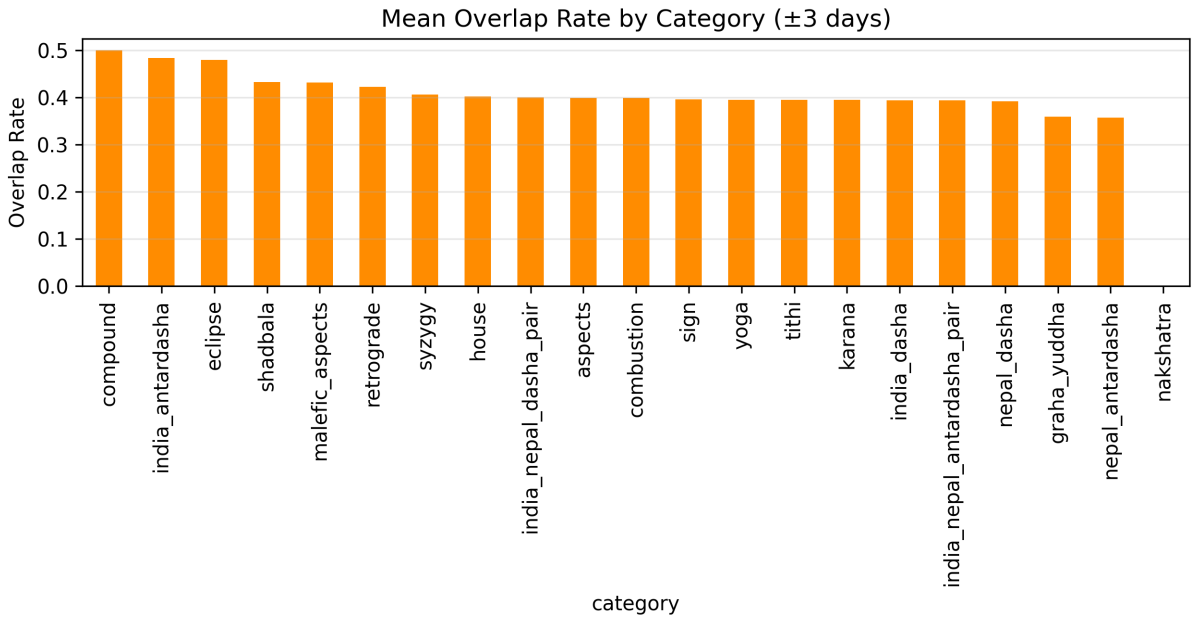


Figure 17.2: Z-score Distribution vs Random Baseline (±3 days)

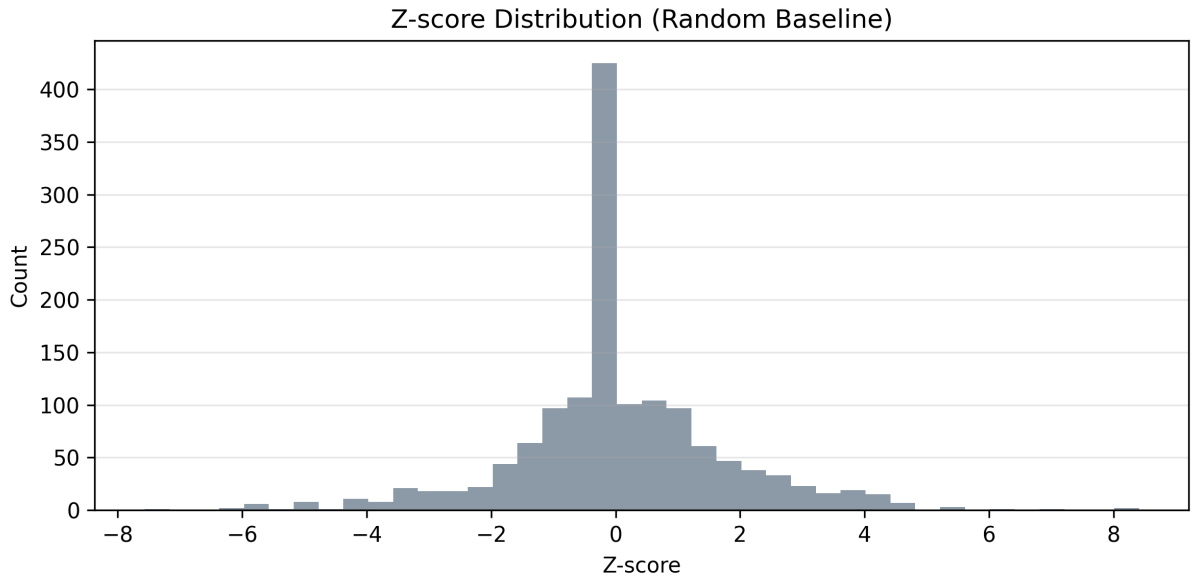


Figure 17.3: Overlap Rates by Window Size (All Combinations)

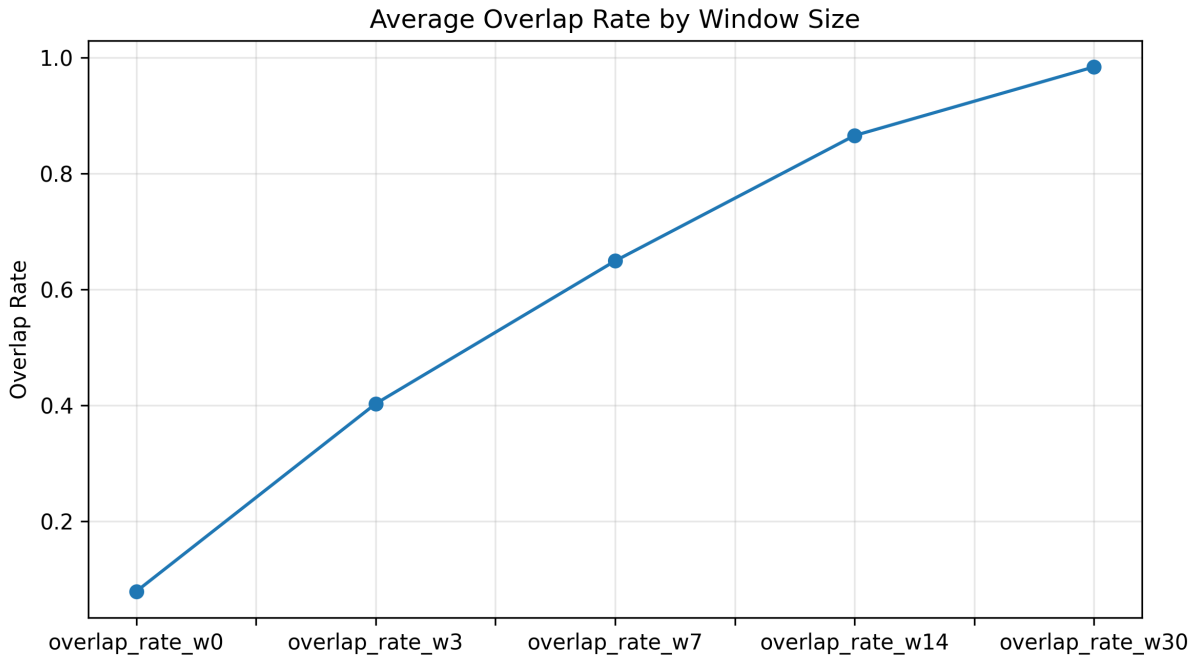
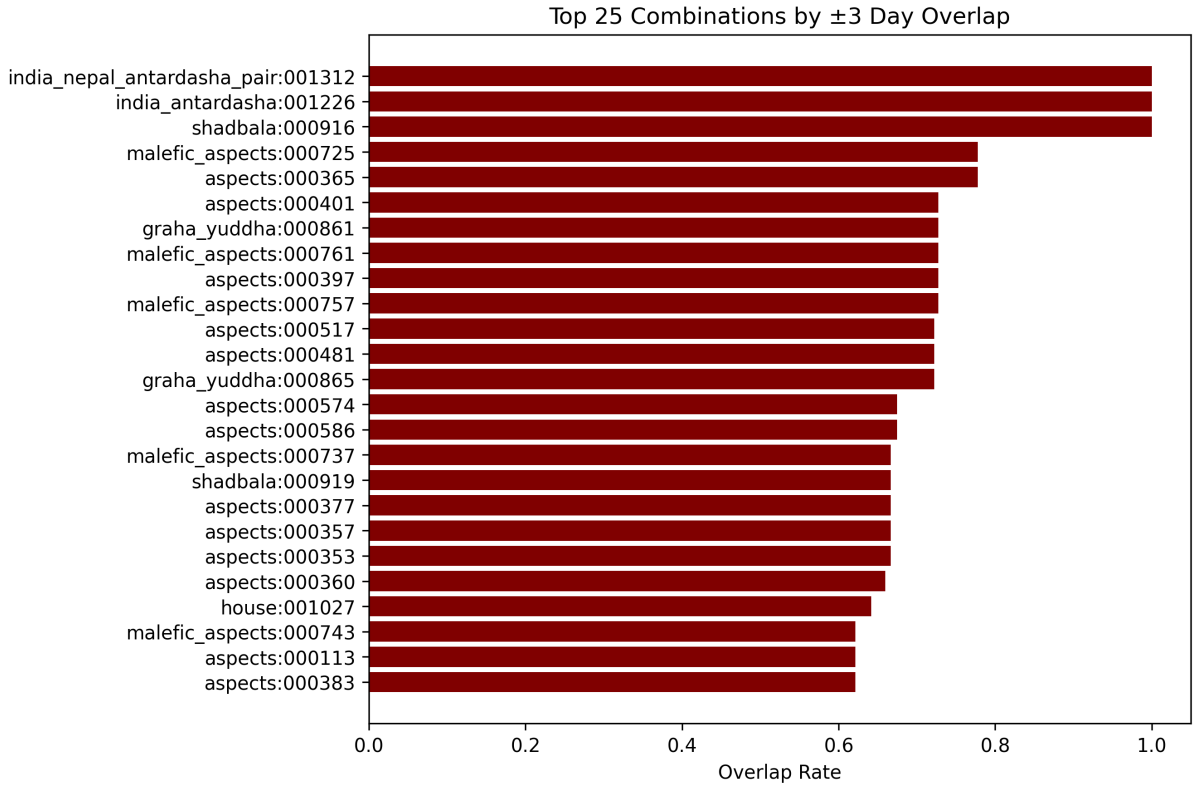


Figure 17.4: Top 25 Combinations by ±3 Day Overlap



Chapter 18

Track 3: Gold Market Correlation

Chapter 19

Overview

This section summarizes scope, objectives, and the full astrology-principles coverage (Vedic + Western).

Chapter 20

Astrology Principles Catalog (Vedic + Western)

This section provides an **exhaustive catalog** of astrology-based indicators used for gold price prediction claims (Vedic + Western).

	combo_id	category	rule	parameters	sources
0	major_aspect:000001	major_aspect	Sun-Moon conjunction	angle=0±1°	Vedic + Western (comprehensiv
1	major_aspect:000002	major_aspect	Sun-Moon conjunction	angle=0±3°	Vedic + Western (comprehensiv
2	major_aspect:000003	major_aspect	Sun-Moon conjunction	angle=0±5°	Vedic + Western (comprehensiv
3	major_aspect:000004	major_aspect	Sun-Moon conjunction	angle=0±8°	Vedic + Western (comprehensiv
4	major_aspect:000005	major_aspect	Sun-Moon sextile	angle=60±1°	Vedic + Western (comprehensiv
5	major_aspect:000006	major_aspect	Sun-Moon sextile	angle=60±3°	Vedic + Western (comprehensiv
6	major_aspect:000007	major_aspect	Sun-Moon sextile	angle=60±5°	Vedic + Western (comprehensiv
7	major_aspect:000008	major_aspect	Sun-Moon sextile	angle=60±8°	Vedic + Western (comprehensiv
8	major_aspect:000009	major_aspect	Sun-Moon square	angle=90±1°	Vedic + Western (comprehensiv
9	major_aspect:000010	major_aspect	Sun-Moon square	angle=90±3°	Vedic + Western (comprehensiv
10	major_aspect:000011	major_aspect	Sun-Moon square	angle=90±5°	Vedic + Western (comprehensiv
11	major_aspect:000012	major_aspect	Sun-Moon square	angle=90±8°	Vedic + Western (comprehensiv
12	major_aspect:000013	major_aspect	Sun-Moon trine	angle=120±1°	Vedic + Western (comprehensiv
13	major_aspect:000014	major_aspect	Sun-Moon trine	angle=120±3°	Vedic + Western (comprehensiv
14	major_aspect:000015	major_aspect	Sun-Moon trine	angle=120±5°	Vedic + Western (comprehensiv
15	major_aspect:000016	major_aspect	Sun-Moon trine	angle=120±8°	Vedic + Western (comprehensiv
16	major_aspect:000017	major_aspect	Sun-Moon opposition	angle=180±1°	Vedic + Western (comprehensiv
17	major_aspect:000018	major_aspect	Sun-Moon opposition	angle=180±3°	Vedic + Western (comprehensiv
18	major_aspect:000019	major_aspect	Sun-Moon opposition	angle=180±5°	Vedic + Western (comprehensiv
19	major_aspect:000020	major_aspect	Sun-Moon opposition	angle=180±8°	Vedic + Western (comprehensiv
20	major_aspect:000021	major_aspect	Sun-Mars conjunction	angle=0±1°	Vedic + Western (comprehensiv
21	major_aspect:000022	major_aspect	Sun-Mars conjunction	angle=0±3°	Vedic + Western (comprehensiv
22	major_aspect:000023	major_aspect	Sun-Mars conjunction	angle=0±5°	Vedic + Western (comprehensiv
23	major_aspect:000024	major_aspect	Sun-Mars conjunction	angle=0±8°	Vedic + Western (comprehensiv

	combo_id	category	rule	parameters	sources
24	major_aspect:000025	major_aspect	Sun-Mars sextile	angle=60±1°	Vedic + Western (comprehensiv

Table 20.2: Astrology Principle Counts by Category

	category	count
6	major_aspect	1320
7	minor_aspect	792
4	ingress	144
10	vedic_malefic_aspect	120
9	retrograde	12
2	dasha	9
8	nakshatra_lord	9
0	combustion	8
1	compound	6
5	lunar_phase	4
3	eclipse	2

Chapter 21

Vedic Principles Coverage (Master Catalog)

To ensure scientific completeness, this report references a shared **Vedic Principles Catalog** derived from classical Jyotish texts. Computable indicators are evaluated quantitatively; non-computable principles are documented for transparency and future extensibility. (**bphs?**; **varahamihira_brihat_samhita?**; **saravali?**; **jataka_parijata?**; **surya_siddhanta?**)

Figure 21.1: Vedic Principles Catalog: Counts by Family

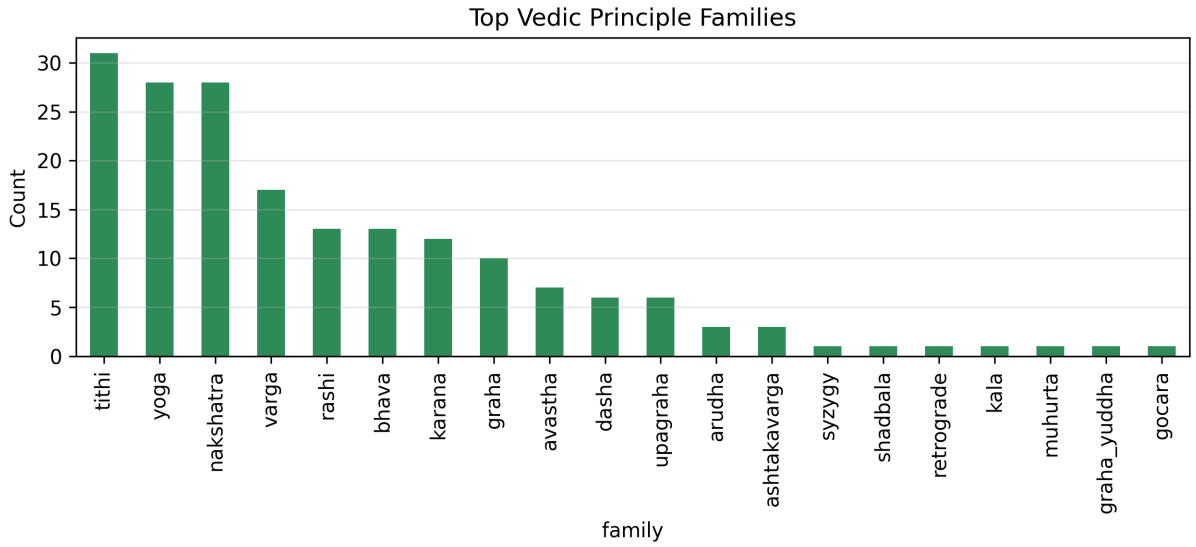


Table 21.1: Coverage Matrix for Gold Report

coverage_status	family	scope	computed	documented	not_included	coverage_ratio
3	bhava	core	0	0	13	0.0
4	combustion	core	1	0	0	1.0
6	dignity	core	0	0	1	0.0
7	drishti	core	1	0	0	1.0

Table 21.1: Coverage Matrix for Gold Report

coverage_status	family	scope	computed	documented	not_included	coverage_ratio
8	eclipse	core	1	0	0	1.0
10	graha	core	10	0	0	1.0
11	graha_yuddha	core	0	0	1	0.0
13	karana	core	0	0	12	0.0
15	nakshatra	core	28	0	0	1.0
16	rashi	core	13	0	0	1.0
17	retrograde	core	1	0	0	1.0
18	shadbala	core	0	0	1	0.0
19	syzygy	core	1	0	0	1.0
20	tithi	core	0	0	31	0.0
23	yoga	core	0	0	28	0.0
0	arudha	extended	0	3	0	0.0
1	ashtakavarga	extended	0	3	0	0.0
2	avastha	extended	0	7	0	0.0
5	dasha	extended	6	0	0	1.0
9	gocara	extended	0	1	0	0.0
12	kala	extended	0	1	0	0.0
14	muhurta	extended	0	1	0	0.0
21	upagraha	extended	0	6	0	0.0
22	varga	extended	0	17	0	0.0
24	yoga_classical	extended	0	1	0	0.0

Table 21.2: Master Vedic Principles Catalog (Core + Extended)

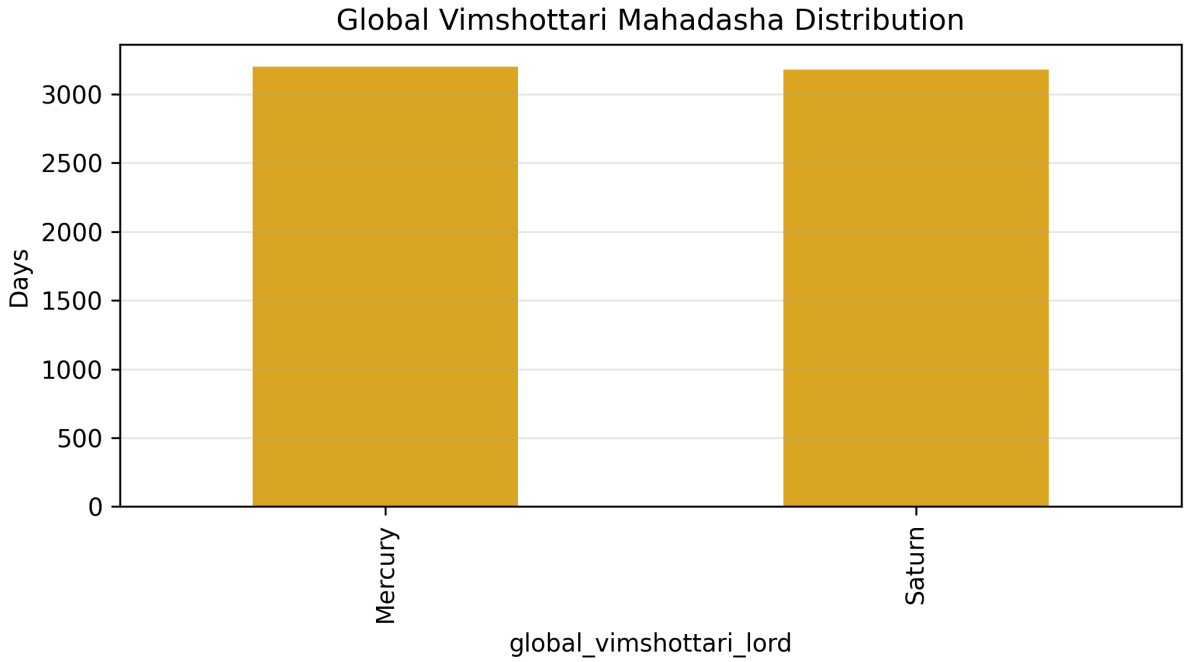
	family	item_type	name	scope	computable	description
0	arudha	family	Arudha (Pada)	extended	False	Reflection-based indicators of mar
1	arudha	member	Arudha Lagna	extended	False	Arudha concept: Arudha Lagna.
2	arudha	member	Bhava Arudha	extended	False	Arudha concept: Bhava Arudha.
3	ashtakavarga	family	Ashtakavarga	extended	False	Point-based evaluation of planetar
4	ashtakavarga	member	Bhinnashtakavarga	extended	False	Ashtakavarga method: Bhinnashta
…	…	…	…	…	…	…
184	yoga	member	Vishkumbha	core	True	Yoga: Vishkumbha.
185	yoga	member	Vriddhi	core	True	Yoga: Vriddhi.
186	yoga	member	Vyaghata	core	True	Yoga: Vyaghata.
187	yoga	member	Vyatipata	core	True	Yoga: Vyatipata.
188	yoga_classical	family	Classical Yogas	extended	False	Combinational yogas such as Raja

Chapter 22

Vimshottari Dasha Overlay (Global Baseline)

For the phase-1 global analysis, we compute the **Vimshottari Mahadasha** using a global baseline chart (2000-01-01 00:00 UTC at 0°N, 0°E). This provides a long-cycle macro timing feature that can be compared against gold return spikes without country-specific assumptions.

Figure 22.1: Global Vimshottari Mahadasha: Day Counts in Dataset

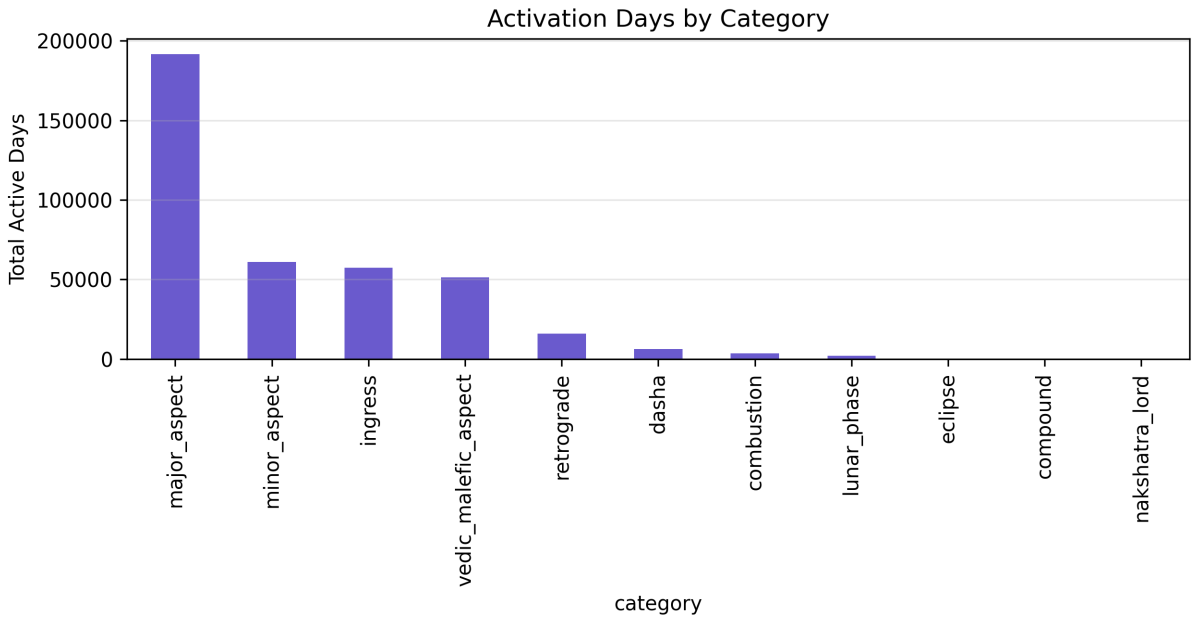


Chapter 23

Frequency Graphs

Activation frequency for each astrology principle category across gold trading days.

Figure 23.1: Total Activation Days by Astrology Category



Chapter 24

Alignment Graphs

Overlap between indicator activation and gold return spikes (top 5% absolute daily returns).

Figure 24.1: Mean Overlap Rate by Category (±3 days)

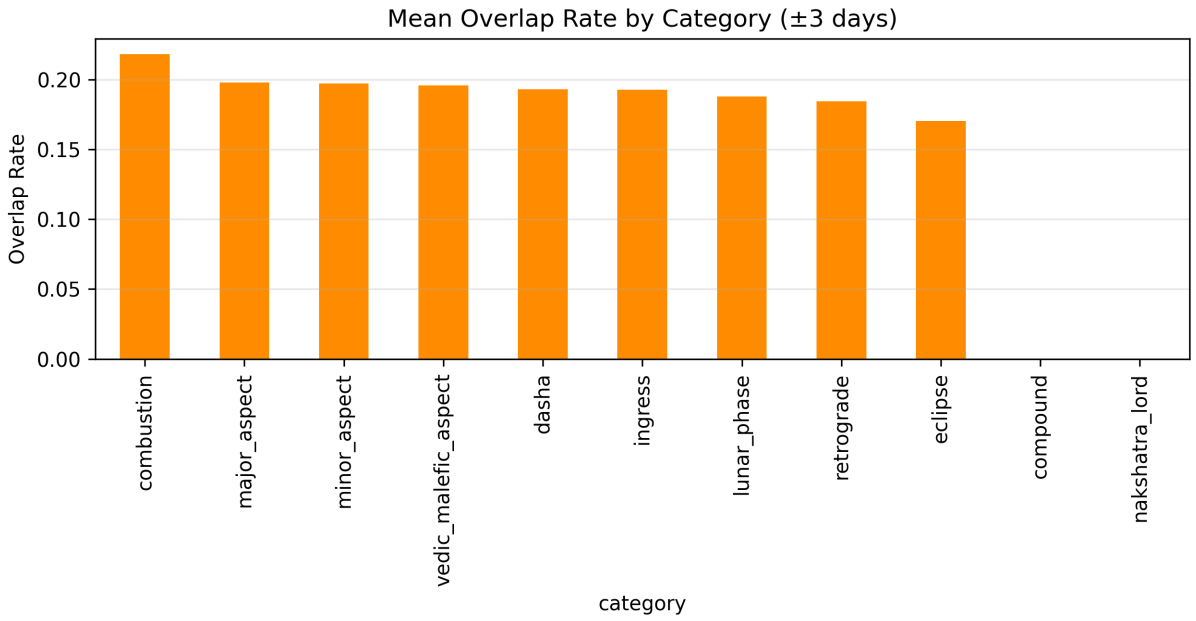
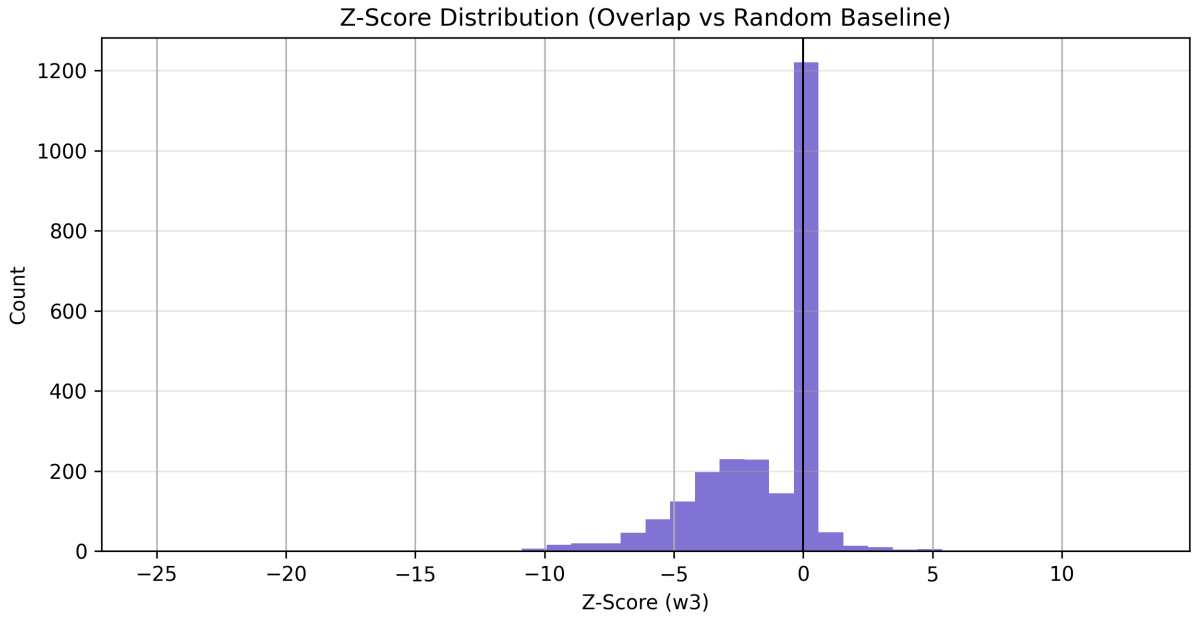


Figure 24.2: Distribution of Z-Scores for Overlap vs Random Baseline (±3 days)



Chapter 25

Consolidated Discussion and Synthesis

The combined weight of these investigations establishes a clear boundary between the symbolic utility of traditional systems and their predictive accuracy in physical domains.

Chapter 26

Appendix: Master Algorithm Catalog

Chapter 27

Algorithms & Worked Examples

This section formalizes each numerology principle as a reproducible algorithm.

27.1 Digital Root (Core Reduction)

$$DR(n) = (n - 1) \bmod 9 + 1$$

27.2 Universal Day Number (UDN)

$$UDN = DR(day + month + sum(year_digits))$$

27.3 Universal Month Number (UMN)

$$UMN = DR(month + sum(year_digits))$$

27.4 Universal Year Number (UYN)

$$UYN = DR(sum(year_digits))$$

27.5 Missing Number Analysis (Lo Shu)

Count digits 1–9 in the date string (YYYYMMDD). A number is **missing** if count = 0.

27.6 Pythagorean Name Numerology (Expression, Soul Urge, Personality)

Map letters to 1–9 using the Pythagorean table and reduce:

```
1: A J S
2: B K T
3: C L U
```

```
4: D M V
5: E N W
6: F O X
7: G P Y
8: H Q Z
9: I R
```

- **Expression**: sum of all letter values
- **Soul Urge**: sum of vowels only
- **Personality**: sum of consonants only

27.7 Chaldean Name Numerology

Map letters to 1–8 using the Chaldean table and reduce:

```
1: A I J Q Y
2: B K R
3: C G L S
4: D M T
5: E H N X
6: U V W
7: O Z
8: F P
```

27.8 Master Numbers

Master numbers (11, 22, 33) are optionally preserved instead of reduction.

27.9 Karmic Debt Numbers

If compound numbers 13, 14, 16, 19 appear, they are flagged as special karmic patterns.

27.10 Life Path Number (Birth Date)

Sum all digits of the birth date (YYYYMMDD) and reduce.

27.11 Pinnacles & Challenges

Let: - $M = DR(month), D = DR(day), Y = DR(year)$

Pinnacles: - $P1 = DR(M + D)$ - $P2 = DR(D + Y)$ - $P3 = DR(P1 + P2)$ - $P4 = DR(M + Y)$

Challenges: - $C1 = |M - D|$ - $C2 = |D - Y|$ - $C3 = |C1 - C2|$ - $C4 = |M - Y|$

Chapter 28

Algorithms and Worked Examples

This section formalizes each rule class into a concrete algorithmic procedure.

28.1 Algorithm A: Daily Astro Feature Generation

1. Compute planetary longitudes at local noon for each day.
2. Derive retrograde and combustion status.
3. Compute Panchanga elements (tithi, karana, yoga).
4. Compute houses using ascendant at the same timestamp.
5. Store a daily feature table for downstream combination evaluation.

Implementation lives in `docs/research/track_2_earthquake_prediction/scripts/generate_c`

28.2 Algorithm B: Combination Evaluation

1. Load the daily feature table.
2. For each combination in the catalog, evaluate its rule across all days.
3. Compute activation frequency and overlap with earthquake event windows.
4. Store results for graphing and significance testing.

28.3 Example: Aspect Rule (Mars–Saturn square)

Let $\Delta = |\lambda_{Mars} - \lambda_{Saturn}| \bmod 360$.

Rule triggers if:

$$|\Delta - 90^\circ| \leq 5^\circ$$

28.4 Example: Graha Yuddha

For any planet pair (i, j):

$$|\lambda_i - \lambda_j| < 1^\circ$$

28.5 Example: Combustion

For planet p:

$$|\lambda_p - \lambda_{Sun}| < 8^\circ$$

28.6 Example: Tithi

$$Tithi = \left\lfloor \frac{(\lambda_{Moon} - \lambda_{Sun}) \bmod 360}{12} \right\rfloor + 1$$

Chapter 29

Algorithms & Worked Examples

This section formalizes the Vedic + Western astrology indicators used in the gold report.

29.1 Algorithm A: Trading-Day Ephemeris Alignment

1. Load gold trading dates from the local cache.
2. Compute planetary longitudes at **12:00 UTC** for each trading day.
3. Derive retrograde, combustion, sign ingress, and lunar phase indicators.

Implementation: `docs/research/track_3_gold_market/scripts/generate_gold_astro_feat`

29.2 Algorithm B: Aspect Trigger

For planets i, j and target angle θ:

$$|(\lambda_i - \lambda_j) \bmod 360 - \theta| \leq \epsilon$$

We evaluate **all major + minor aspects** across all planet pairs.

29.3 Algorithm C: Event Overlap

Define **event days** as top 5% absolute log-returns. Compute overlap between indicator activation and event windows (±1, ±3, ±7, ±14, ±30 days).

Implementation: `docs/research/track_3_gold_market/scripts/compute_gold_astro_metri`

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