Analyzing the Voting Patterns of Delegates in Arbitrum Proposals

(Analysis of Delegates Voting Patterns in Arbitrum Proposals)

Description of the main task: The "Analysis of Delegates Voting Patterns in Arbitrum Proposals" project aims to investigate the voting behaviors of delegates within the Arbitrum governance framework. Through rigorous statistical analysis of a comprehensive dataset, we seek to uncover consistent patterns and correlations in delegate voting across various proposals. The approach prioritizes systematic methodology and thorough documentation, aiming to provide valuable insights into delegate participation and decision-making dynamics.

Description of the sub-task - Fundamental observations from the snapshot votes: The sub-task "Fundamental observations from the snapshot votes" involves a comprehensive analysis of voting patterns and behaviors captured in the snapshot votes dataset. This analysis aims to extract fundamental insights into the dynamics of voting activities within the Arbitrum governance framework. By examining various aspects such as the types of proposals used, the frequency of proposal creation, participation rates, and voting power distribution, we aim to uncover key observations that shed light on the underlying mechanisms driving decision-making processes in the Arbitrum ecosystem. Through this exploration, we seek to provide valuable insights that contribute to a deeper understanding of delegate behavior and governance dynamics in decentralized systems.

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Introduction:

Snapshot serves as an off-chain voting platform where various proposals are presented for voting by participants within the blockchain network. Unlike on-chain platforms such as Tally, voting on Snapshot incurs no associated costs due to its off-chain nature. The dataset utilized in this analysis comprises voting data from Snapshot for proposals within the Arbitrum DAO ecosystem.

Summary:

The analysis conducted on the votes data of Arbitrum DAO proposals on Snapshot provides valuable insights into the voting patterns and behaviors within the ecosystem. Here are the key findings:

1. **Types of Proposals:** The data includes multiple types of proposals, with each type representing different voting mechanisms or structures.
2. **Distribution of Proposals:** The analysis reveals the number of proposals present in each proposal type, shedding light on the prevalence of different types within the dataset.
3. **Test Proposals:** An examination for test proposals was conducted, identifying any instances within the dataset.
4. **Maximum Votes Timestamp:** The timestamp at which the maximum number of votes was received was determined, providing insight into peak voting activity.
5. **Month with Maximum Proposals:** The month with the highest number of proposal creations was identified, potentially indicating periods of heightened proposal activity within the ecosystem.
6. **Proposal with Highest Voting Power:** The proposal with the highest aggregate voting power was pinpointed, indicating significant influence within the voting process.
7. **Proposal with Maximum Votes or Voters:** The proposal with the maximum number of votes or voters was identified, reflecting its popularity or engagement level among participants.
8. **Voters Participation:** The number of voters who participated in all proposals and those who voted for only one proposal were determined, highlighting distinct engagement levels.
9. **Unique Voters:** The total number of unique voters across all proposals was calculated, offering a comprehensive view of voter participation.
10. **Frequency of Proposal Creation:** Certain types of proposals were observed to be created more frequently than others, indicating potential trends or preferences within the community.
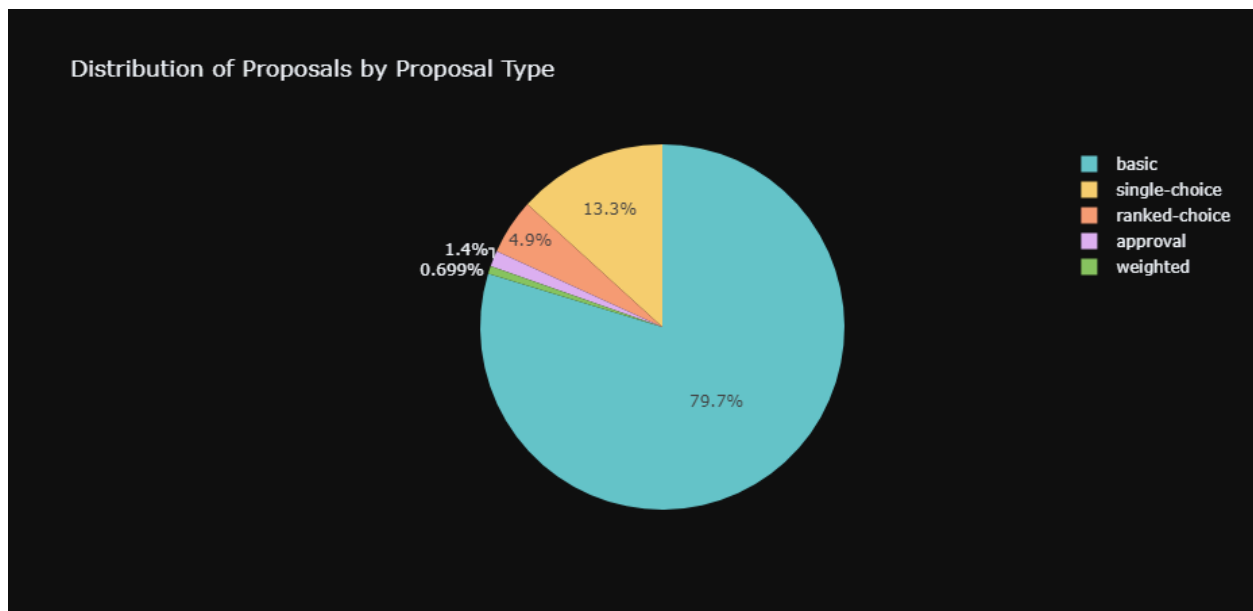
Analysis:

1. **Types of Proposals used on Snapshot:**
   - Basic Type
   - Single-Choice Type
   - Ranked-Choice Type
   - Approval Type
   - Weighted Type

2. **Number of Proposals in Each Type:**
   - Basic Type: 115
   - Single-Choice Type: 19
   - Ranked-Choice Type: 7
   - Approval Type: 2
   - Weighted Type: 1

Source: Graph Link

Based on the pie chart, it's evident that the majority of proposals, comprising 79.7%, fall under the Basic Type category. Following this, 13.3% are classified as Single-Choice Type, 4.9% as Ranked Type, 1.4% as Approval Type, and a smaller fraction of 0.699% are categorized as Weighted Type proposals.

3. **Test Proposals:**
   - Identified 2 proposals with identical titles, with one labeled "[REAL]" likely indicating a test proposal.
   - We considered the proposal without the "[REAL]" keyword as the test proposal.
   - The proposals are:
     - [AIP 1.05: Return 700M $ARB to the DAO Treasury](#)
     - [AIP 1.05: Return 700M $ARB to the DAO Treasury [REAL]](#)

4. **Timestamp with Highest Votes:**
   - Timestamps:
     - 2023-10-09 05:53:10
     - 2023-10-09 05:33:51
   - Number of votes: 118

Top 10 Timestamps with Maximum Votes
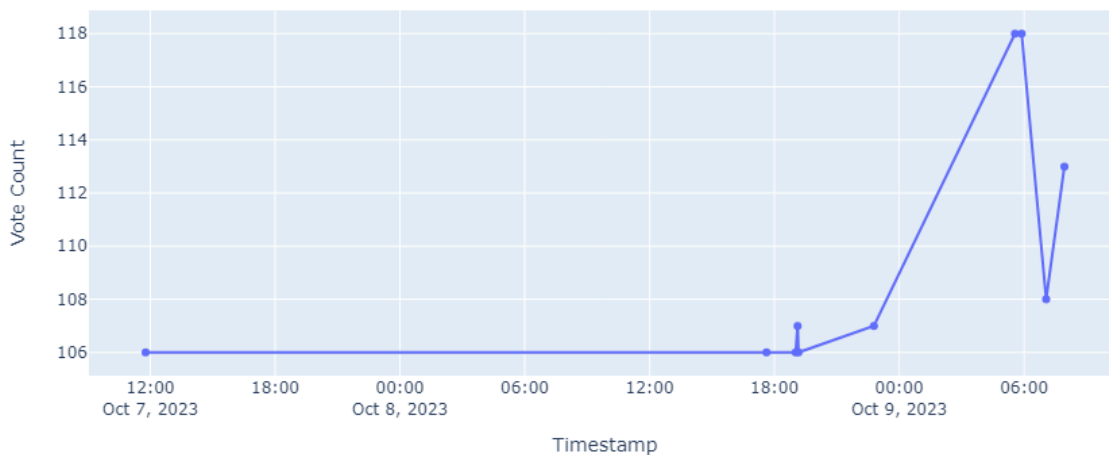
Source: [Graph Link](#)

The above graph represents the maximum votes received on top 10 timestamps. From the above graph it is evident that the maximum votes were received on the above mentioned 2 timestamps.

5. Month with Maximum Proposal Creations:
   - October, 2023 witnessed the highest number of proposal submissions.

Proposals Count by Year-Month
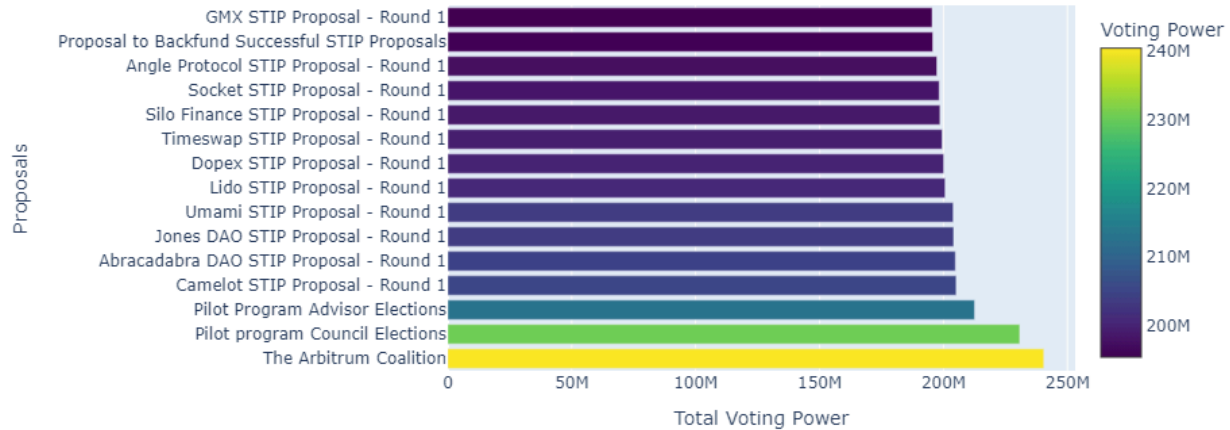

Source: Graph Link

Based on the provided line chart depicting the number of proposals created in each month:
- The chart illustrates the monthly distribution of proposals created on Snapshot in Arbitrum DAO.
- The highest number of proposals, totaling 100, were observed in October 2023, indicating significant activity during that period.
- Proposal creation seems to fluctuate across different months, suggesting varying levels of engagement or interest from participants throughout the observed period.

6. **Proposal with Highest Voting Power:**
   - Proposal Title: The Arbitrum Coalition
   - Voting Power: 240,473,800.22

Top 30 Proposals by Total Voting Power

Source: [Graph Link](#)

The horizontal bar chart above displays data for 15 proposals arranged in descending order based on the total voting power received for each proposal. The color of each bar represents the total voting power it received. Y-axis represents the proposal titles and X-axis represents the voting power range.

The yellow colored bar in the chart represents the proposal titled "The Arbitrum Coalition", which received the highest voting power.

7. **Proposal with Maximum Votes/Voters:**
   - Proposal Title: Arbitrum as official sponsor of Ethereum Mexico 2023
   - Total Votes: 53,602

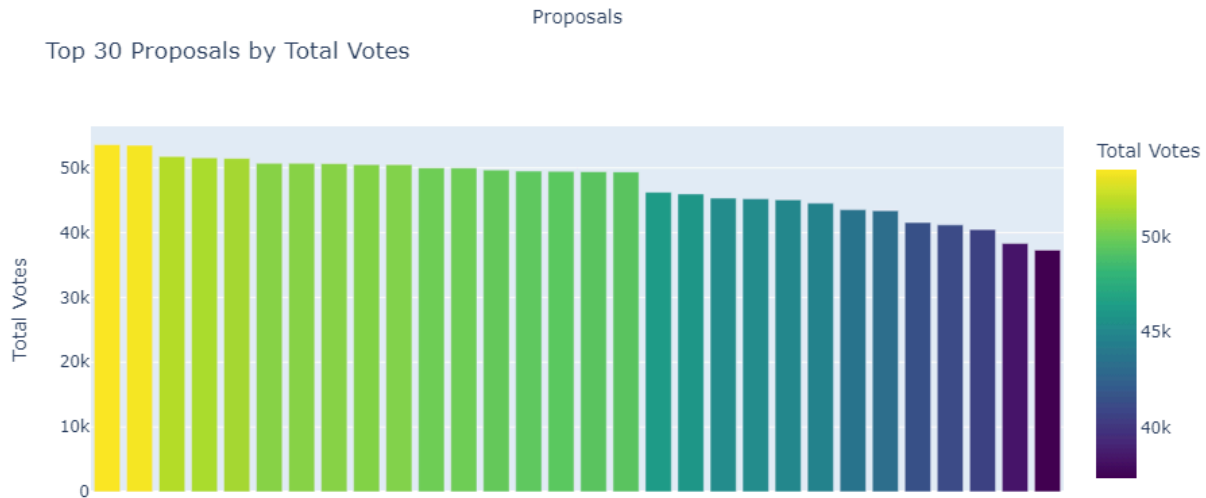**Source: [Graph Link](#)**

The bar chart above displays data for 30 proposals arranged in descending order based on the total votes received for each proposal. The color of each bar represents the total number of votes it received.

The first bar in the chart represents the proposal titled "Arbitrum as official sponsor of Ethereum Mexico 2023", which received the highest number of votes, totaling 53,602 votes.

8. **Number of Voters Participating in All Proposals:**
   - 177 voters participated in all 143 proposals.
   - [List of 177 Voter Addresses](#)

9. **Number of Voters Participating/Voting in Only One Proposal:**
   - Total voters: 13,520

10. **Unique Voters Across All Proposals:**
    - Total unique voters: 152,977
    - Distribution across different types of proposals:
    - Basic Type: 39,470

- Single Choice Type: 31,723
- Ranked Choice Type: 2,739
- Approval Type: 734
- Weighted Type: 420

Unique voters signify those voted only for a specific type of proposal. 46.53% of total voters only vote on basic & single-choice type of proposals. Higher number of unique voters for basic & single choice type indicates more users are familiar with these types of proposals & they perhaps find it hard to vote for any other type. This can also indicate a requirement of educating members on different types of proposals, especially when the DAOs aim is to increase decentralized voting.

11. Frequency of Proposal Creation:
- Basic Type proposals are created more frequently compared to other types.

Overall Conclusion:

The analysis conducted on the votes data of Arbitrum DAO proposals on the Snapshot platform provides valuable insights into the governance dynamics and voting patterns within the ecosystem. Here are the key takeaways from the analysis:

1. **Proposal Diversity:** The data reveals a diverse range of proposal types, each employing distinct voting mechanisms or structures. From basic and single-choice to ranked-choice and weighted types, the ecosystem accommodates various approaches to governance decision-making.

2. **Proposal Distribution:** Basic type proposals dominate the landscape, indicating their prevalence and popularity among participants. However, other types such as single-choice and ranked-choice also contribute significantly to the proposal ecosystem.

3. **Test Proposals:** A thorough examination identified test proposals within the dataset, allowing for the exclusion of such instances to ensure the accuracy of the analysis.

4. **Voting Activity:** The timestamp analysis highlights periods of peak voting activity, with October 2023 emerging as the month with the highest number of proposal submissions and votes cast. This suggests potential events or initiatives driving heightened engagement within the community during that period.

5. **Influence and Engagement:** The identification of proposals with the highest voting power and maximum votes/voters underscores their significance and popularity within the ecosystem. Moreover, the participation of 177 voters in all proposals demonstrates a dedicated and highly engaged subset of the community.

6. **Voter Participation:** The analysis of unique voters across different types of proposals reveals the breadth of engagement within the ecosystem. While certain types attract more voters, the distribution of unique voters across various proposal types indicates diverse participation and interests among the community members.

7. **Governance Trends:** Basic type proposals emerge as the most frequently created, suggesting a preference for this voting mechanism within the community. This observation underscores the importance of understanding governance trends and preferences to facilitate effective decision-making and community engagement.

In conclusion, the analysis provides valuable insights into the dynamics of governance and

voting behavior within the Arbitrum DAO ecosystem. By understanding the distribution of proposals, voter engagement, and governance trends, stakeholders can make informed decisions to foster a vibrant and inclusive governance process within the community.

Dataset:-

Link: [Dataset Used]()

Resources:

1. Lighthouse(for hosting the visualization files): https://docs.lighthouse.storage/lighthouse-1

2. Pinata IPFS(for hosting the dataset): https://black-decisive-cobra-689.mypinata.cloud/ipfs/

3. Python Plotly Library(for creating interactive graphs): https://plotly.com/python/

4. Python Pandas Library(for the data processing and manipulation): https://pandas.pydata.org/docs/

5. Snapshot API Docs (For getting snapshot votes data): https://docs.snapshot.org/tools/api

6. Github Repository Link : https://github.com/Jason4276/Fundamental-observations-from-the-snapshot-votes