A. **Introduction:** Despite increasing numbers of Decentralized Finance Protocols and apps which leverage blockchain economics to incentive users, widespread consumer adoption of digital assets remains challenged. Divvy Wealth, the consumer-focused DeFi app & protocol introduced in this paper, brings a novel, socially-engaging approach towards acquiring digital assets and sharing a percentage of the growth in returns with loved-ones as a means to provide financial support via a collateral-backed VISA credit card.

B. **Problem Statements**
    a. The problem of non-degens and non-early-adopters excluding digital assets from their savings & investment practices.
    b. The problem within families of individuals that have a range of financial situations, from high-income earners to those struggling financially, some members may experience unmet basic needs because they feel unable or unwilling to ask for help from more financially stable relatives, despite the likely availability of support.
    c. Although allowances are a common pattern for providing financial assistance from parents to their children, families within the United States do not have a structured way of providing regular allowances to adults; save for the wealthiest families which use Trusts to pool money and regularly distribute funds to trustees.
    d. There is much friction that inhibits mainstream consumers from participating in Decentralized Finance – deciphering the esoteric language of DeFi protocols, navigating the unfamiliar UI patterns of decentralized and centralized exchanges, and managing private keys are all daunting tasks for those uninterested in being first adopters of technology trends. Additionally, for consumers based in the United States, pace is slow in the regulatory changes needed to allow DeFi apps to streamline their UX and use language which more closely matches the financial investment terms that are familiar to consumers.

C. Target Personas
    a. As a member of a family with a mix of high and low-income earners, I want to…
        i. pool funds with as many family members as possible, to invest in lower-risk digital assets so that we can collectively build wealth.
        ii. Ensure that family members feel empowered to take some money and use it in their time of need instead of silently struggling.
    b. As a mid-level risk-taker who does not own any virtual currencies, I want to invest in digital assets with my close friends to potentially gain higher returns without risking everything.
    c. As a self-proclaimed luddite who has never interacted with cryptocurrency, I want to use an app with familiar financial language and a simple UI that only reveals complexity and technical jargon on a need-to-know basis, so I can participate in the digital asset economy with minimal discomfort.

D. Key Features: Built with Near Protocol's flexible account model, programmable contracts which manage invite-only pools of mixed assets, and Near’s Chain Signature technology, Divvy Wealth aims to help close America’s economic wealth-gap by giving

easier access to income-generating digital assets and empower family units to financially assist each other in times of need, autonomously, and without shame.

a. **Growth-based Allowances**
    i. As a novel way of using protocol contracts and live market data to support cash positive withdrawals, Divvy enables people who send remittance payments, allowances, or simply provide occasional financial support to a loved one, to do so from the increasing value of their on-chain assets, without reducing their portfolio's value below its initial investment amount including cash in and out flows.
b. **Built-in Distribution**
    i. Divvy's user experience focuses on building wealth in digital assets together. As part of the application's core experience, users invite friends and loved ones via SMS to participate in private, self-custodied, pools of digital assets as either depositors (those who deposit funds and acquire tokens) or allowance receivers (those who are configured to receive an allowance based on the portfolio's recent growth). With notifications that share the deposit and allowance activity of fellow pool members, users are nudged to regularly engage with Divvy, similar to the engagement feedback loops of group text messages whereby activity from one person encourages others to respond.
c. **Divvy Branded VISA Cards**
    i. Divvy enables users to acquire digital assets and enjoy a familiar spending experience by allocating their funds as collateral to a Divvy Visa card, issued by Rain. Benefactors will be able to spend their allowances with the Divvy Visa, without ever needing a cryptocurrency wallet.
d. **Risked Based Asset Allocation**
    i. Asset allocations are recommended per pool based on the pool creator's self-declared risk preference and liquidity needs; as you move from the lowest towards the highest risk, the immediate liquidity decreases (by reducing the amount of stablecoins) and that value is shifted into tokens spread across market leaders in their category such as Highest Market Cap (BTC), AI Focused (NEAR), DeFi & Prediction Markets (ETH), and NFT Focused Solana (SOL) when EDDSA becomes supported by Near Protocol's Chain Signatures.
e. **Multi-Chain Asset Vaults**
    i. Near Protocol's Chain Signatures will be used to create MPC accounts controlled by the Divvy Vault contracts, allowing it to receive Fungible Tokens of ECDSA blockchains which can be used as collateral for the Divvy VISA card.
f. **Minimal Onboarding**
    i. To delay securing seed phrases and slowly graduate non-crypto-native users towards more sophisticated account management only once they own substantial assets, webAuthN and Near Protocol's support for meta-transactions will allow users to onboard in two steps; phone number

verification via SMS, and authorizing passkey storage of newly created private keys.

g. **TradFi On-ramp & Off-ramp**
    i. Divvy will use Onramper's aggregator to provide users with the most cost effective path to convert fiat to USDC and USDT, and to convert crypto to fiat with support for deposits into United States based banks.

E. Technical Implementations

a. **Minimal Onboarding**
    i. With webAuthN and Near Protocol's support for meta-transaction relayers, users who do not have a wallet or existing blockchain account can onboard without having to secure a seed phrase. Their Near Protocol address will be created with private key saved into passkey storage, while experienced dApp users can use their existing account via WalletConnect.
    ii. Although the Divvy UX is designed with non-crypto natives as the target persona, users with an existing account on an ECDSA blockchain will be able to connect via MetaMask or WalletConnect. Support for EDDSA accounts will be added in the future.

b. **Risked Based Asset Allocation**
    i. The UX will assess a user's risk tolerances, then recommend an asset allocation that aligns with their preferences and liquidity needs; from interest bearing stable coins only, to a mix of Near-native stable coins, NEAR staking, and holding tokens across market leaders in their category such as Highest Market Cap (BTC), AI Focused (NEAR), DeFi & Prediction Markets (ETH), and NFT Focused Solana (SOL) when EDDSA becomes supported by Near Protocol's Chain Signatures.
    ii. The decentralized oversight of the Divvy Protocol contracts may involve a DAO and governance token for eventual community control and evolution of Divvy contracts and maintenance of the tokens allocated across the market categories.
    iii. **Preferences Model.** While the MVP is in use, the preference questions will be used to train a NEAR AI model to adapt the questionnaire based on responses, to be able to ask more questions in areas where the user's qualitative responses, risk tolerance, or liquidity needs aren't clear.
    iv. **Feedback Model**. Soliciting user feedback on portfolio recommendations will provide responses used to train a Near AI Model that aggregates and learns from user feedback. This will enable Divvy to adapt to the dynamic changes in digital asset markets and their impact on user preferences and risk tolerances over time, to better align the recommended portfolio allocations to changes in user needs.

c. **Multi-Chain Asset Vaults**

i. Vaults on Divvy are liquidity pool contracts which manage token deposits and depositors' shares of a vault, similar to the contracts which manage liquidity pools on ref.finance, with a few key differences:
   1. Depositor shares are stored per vault in a mapping of depositor accountId to an integer representing their ownership stake.
   2. Divvy pools need not maintain a balance in value between sets of tokens.
   3. Pools will be permissioned to only allow transactions from the pool creator and accountIds which have been invited to pool.
   4. Near Protocol's Chain Signatures will be used to create MPC accounts controlled by the Divvy Vault contracts, allowing it to receive cross-chain Fungible Tokens and use them as collateral for VISA off-ramps.
   5. Users will onboard with USDC, USDT, or NEAR, and token swaps into the desired portfolio allocation will leverage Ref Finance v2 contracts or near-intents, bringing additional liquidity into Near's Defi ecosystem.

d. **TradFi On-ramp & Off-ramp**
   i. The MVP will use OnRamper's drop-in modal; their on-ramp features are also directly available via APIs and webhooks should we want to design a UI to avoid a disjointed user-experience. To mitigate the state-by-state availability on and offramps in the USA, we will also consider how Coinbase may offer more reliable on and offramps.

e. VISA Off-ramp
   i. For allowance receivers and depositors who desire to off-board their assets directly to a VISA card, Rain will be used to issue ERC-20 collateral-backed VISA credit cards, which are automatically paid each billing period using the linked collateral. The cards will have spending limits to prevent balances from exceeding the value of the stablecoin used as collateral. As the credit card issuer, Rain will handle KYC/KYB management, transaction monitoring, and dispute adjudication.

f. Allowances
   i. Allowances are essentially a payment configuration between an allowance receiver, a depositor, and a depositor's pool funds. Allowance configurations will be private, stored in PostGresSQL accessible by authenticated APIs, and used to trigger an on-chain transaction request for a depositor to approve an allowance distribution being sent to the collateral contract of the associated receiver's Visa.
   ii. Divvy will use its protocol contracts, an Oracle and off-chain services, with a portfolio's Money Weighted Rate of Return (MWRR) over a rolling period of 14-days to allocate USDC and USDT as collateral to VISA cards without reducing the portfolio's value below its initial investment amount including cash in and out flows.

iii. Allowances are sent to a beneficiary's VISA only if the corresponding contributor(s) pool funds have increased by greater than the allowance % at the end of each 14-day period.
iv. Allowances will have a limit, enforced via Divvy's contracts, of up to 10% of the pool's total USD value. Because the assets are self-custodied and there is no lock-up period, depositors are able to manually withdraw any amount <= their share percentage, even exceeding the allowance maximum, for their own use to do as they please.
v. The UI will allow depositors to configure allowances per pool, where each depositor can configure allowances, and contribute their proceeds to the allowance totals of any allowance receiver in the pool.
vi. For example, Alice and Bob are depositors in a pool, Alice adds Richard as an allowance receiver such that funds are sent to his debit card up to once every 14 days, in an amount equal to 5% of her portion of the pool if her portion of the pool's money weighted return has has increased by at least 5% at the end of the most recent 14 day period. Bob decides to add Lebron as an allowance receiver, with a config of up to 2% once every 14 days. Bob also sets a 3% allowance to go to Richard.
    1. There are now two allowances configured for this pool, with Richard able to receive a potential total of 5% of Alice's share plus 3% of Bob's share. While Lebron is able to receive a potential total of 2% of Bob's share.
vii. Depositors will receive a notification prompting them to approve an allowance distribution only if the money-weighted rate of returns (MWRR) over a rolling 14-day period exceeds the total allowance percentages of the associated pool(s). The rolling period will reset when an allowance distribution is triggered. The MWRR will be computed daily, calculated iteratively by repeatedly adjusting an initial guess rate (10%) until the net present value of the cash flows becomes zero; rejecting the result unless it is accurate to within 0.000001 percent.(i)

F. Known Challenges

a. Although widespread credit card issuance is on their roadmap, Raincards are currently only available in 18 of the United States. For users in regions unsupported by Rain, we will also consider Coinbase for ACH offramps.
b. While OnRamper allows individuals from all 50 states to convert fiat to crypto, Onramper restricts residents from several states from off-ramping, crypto to fiat. To mitigate the state-by-state availability of on and offramps in the USA, we will also consider how Coinbase may offer more reliable on and offramps.

G. Conclusion

a. Divvy Wealth brings familiar traditional finance savings and allowance use-cases into the future with a novel use of decentralized finance protocols. Its core innovation are its configurable allowance payments which take from the top of portfolio gains, without reducing a portfolio's value below its initial investment amount including cash in and out flows. This feature along with the built-in

distribution channels of creating invite-only pools and the physical Divvy Visa payment cards position Divvy Wealth as an approachable, consumer-friendly application; well positioned to guide non tech-savvy users into the waters of decentralized finance, one pool at a time.

H. Appendix

a. Market Data

i. Only 16% of Americans reported having invested in, traded, or used cryptocurrencies. (pew research)

ii. In 2016, 26% of Americans reported providing financial assistance to someone outside their immediate household, while 12% reported receiving such help. (pewtrusts)

iii. From Chamas in East Africa to Rotating Savings & Credit Associations in Asian and Latin American groups, collective investment & distribution strategies are deeply rooted in eons of cultural traditions. (Vice)

iv. Ownership rates of non-retirement investment assets are significantly lower in black and hispanic households than white households, even within the same income quartiles. (treasury.gov)

b. Footnotes

i. This is inspired by Microsoft Excel's XIRR function.

c. Competitive Landscape

There are many products which do ‘round up’ micro investing to build a portfolio of crypto assets over a longer timeframe, budgeting/debt-repayment, and those which take a hands-off brokerage approach. None offer an allowance-style wealth distribution for adults (one does this for families with children), and none of the competitors with similar features offer a mobile-first experience. The closest competitor which includes a social dynamic in its core experience loop appears to be the iOS/Android app SumaWealth, which focuses on financial education, and the pooling of a group’s savings towards specific goals.

1. Shrimp Investing, a set-it-and-forget-it style investment advisor. Similarities: risk-based investment recommendations into buckets of crypto assets picked by their centralized advisory team. This is a traditional brokerage style robot-investor, individual “single-player” type experience. There are no send payments features nor social aspects.
2. Public and eToro feel like full-service brokerage/exchange platforms that mirror typical TradFi platforms, with cryptocurrencies included, and focused on education and social engagement. Other notable features are Public’s AI Investment Insights (Alpha) and eToro’s CopyTrader feature.
3. Betterment, a mostly tradFi robo-style investor that offers limited exposure to crypto via Bitcoin and Ether ETFs.
4. Crypto Simple App, available to European and North American users as an iOS and Android app. Similarities: risk-based investment recommendations into buckets of crypto

assets picked by their centralized advisory team. They offer multi signature custodial wallets. This is a traditional brokerage style robot-investor, individual “single-player” type experience. There are no send payments features nor social aspects.

5. M1, Similar to the CryptoSimple app, except M1 is web-based; not a native-mobile app, they also offer a credit card - the “Owners card” which does not use your crypto assets for payment nor as collateral, rather their visa-backed card offers cash-back rewards of up to 10% that can be auto-invested into a user’s portfolio.
6. Arcadia Finance, Globally available via Base & Uniswap, They offer “1-click” investing into AI Yield-Optimized portfolios. This is for people comfortable with Defi. The UI allows users to self navigate through a variety of pools to be able to use leveraged positions on liquidity provided to Decentralized Exchanges. They expect users to bring enough familiarity to navigate options which appear to convey 100-900% returns, and language such as Lending, Borrow, Delta Neutral and “Risk of being liquidated”
7. Alongside, Not yet available in the U.S. Takes an index-fund approach towards simplifying investing in digital assets; allowing users to own a single token that represents their share in a managed index of 15 tokens.
8. Near Yield, Currently under development; targeting mainnet launch prior to 2025. Uses AI to make its users aware of cross-chain yield farming opportunities which match their risk profiles.
9. Launched in Nigeria/Ghana, not available in the US. Bamboo App. Hands-off crypto investing based on preconfigured allocations of microfunds to the eventually be used to buy crypto at regular intervals.
10. Launched in Ghana, not available in the US. TradFi focused Achieve App partners with licensed fund managers to quickly setup and manage 'safe investment products'
11. Launched in 2022 - Stackwell’s monthly subscription native app focused on TradFi automated investing for Black Americans
12. Casting a wider net here: These are more focused on cost analysis & budgeting with some automated TradFi investments
13. Launched in 2023 - Suma uses game-style tools to make financial planning engaging and accessible; with pools savings accounts to put towards certain goals. targeting Gen Z Latinos They promote that their tracking process uses NFTs as badges of progress. “A key way to boost wealth building among the nation’s 60 million Latinos, said Acevedo, is through its youth. “They are the ones influencing their older parents and their tíos and tías and abuelas (uncles, aunts and grandmothers), and also their younger family members.”
14. Launched in 2021 Qoins. TradFi focused on savings and debt repayment. Appears to be shutdown, with customer complaints about funds held hostage during the business’s efforts to switch banks.
15. Launched in 2019 GoalSetter aims to “Revolutionize Family Finance”. TradFi focused on fractional investing, financial education, configuring/distributing allowances (e.g. to teach kids about money/savings), shared debit cards, and savings.
16. Breaux Capital Investment Club. TradFi focused; seems like typical managed brokerage accounts.
17. Altro. TradFi; financial education, credit building, subscription management.

18. Wealth-8 and Chip Launched in the UK, not available in the US. TradFi focused automated brokerage services apps
19. There are also several mobile-first banks focused on black/brown communities.