SCRIP.NYC: Sustainable Financing for Humanitarian Emergencies

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Abstract

Reclaiming value from some forms of waste through scrip issuance can reduce New York City's budget demands by billions of dollars. User adoption and system efficiency are significantly enhanced by leveraging the existing OMNY or Metrocard systems. Limiting range of function distinguishes scrip from national money, while a pre-programmed rate of decay disincentivizes hoarding and non-productive use. Incentivizing dual-currency transactions, in which buyers and sellers use both scrip and legal tender within a single transaction, would likely result in limited deflation — lower dollar-denominated prices for goods and services — in the scrip-use region, without corresponding decreases in consumption. Fees collected from decaying scrip can sustain the ongoing maintenance of the system and, with broad usage, may even finance a commensurate expansion of humanitarian spending.

1 Introduction

New York City's economic future is dark, uncertain, and unsustainable. Currently supporting hundreds of thousands of asylum-seeking immigrants, with hundreds more arriving weekly, its social services network is critically overwhelmed — a situation expected to "destroy New York City" (Fitzsimmons, 2023). Consequently, billions of dollars are needed to maintain these support services in the near term (Office of the New York State Comptroller, 2024), with no viable long-term funding solution within reach. In response, SCRIP.NYC proposes a practical mechanism leveraging well-established technologies and proven complementary economic systems to unlock vast pools of latent capital — enough to meet New York City's acute short- and long-term emergency humanitarian funding needs.

2 Latent Capital

2.1 What is Latent Capital?

We live in a wasteful society. At the end of each day, delicatessens throw away fresh, unsold bagels; homes toss out working appliances, and offices dump unused supplies and furniture. Similarly, New York City generates a variety of waste as part of its daily operations, including the waste of unused resources.

In general, unused resources hold some non-zero, unrealized value before they become waste. An empty subway seat, for example, can meet the needs of a person who must travel from one place to another. But at the end of the line, all the unrealized value held by the empty seats on that train is lost, until the train reverses direction and the cycle of value creation — and waste — begins anew.

An unused train seat, then, can be thought of as wasted latent value: an asset with economic potential that is neither fully recognized nor realized. The Metropolitan Transit Authority (MTA) monetizes unused seats by selling fares — a transition from latent value to functioning capital through the use of *scrip*, a credit or substitute for legal tender (in this instance, valid only within the transit system) — and yet, despite selling millions of fares each day, not all seats and spaces are filled at all times. Waste persists.

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Ridership data reveals immense latent value waste in the subway system. At roughly 65.17% of pre-pandemic weekday ridership levels (Metropolitan Transit Authority, 2020, 2024), or nearly five million fares per day, there's a difference of 2.67 million fares lost each day relative to 2019 — equivalent to discarding, roughly, $232 million each month. Using the record ridership level of 6,217,621 passengers (Rivoli, 2015) as a proxy for full capacity,[1] wasted subway capacity amounts to over $2.7 billion each year.[2]

This type of waste is generally accepted as a necessary operational cost, but consider the possibility of converting unused subway seats into a practical and compact form suitable for carrying — a scrip; a complementary medium of exchange operating alongside traditional fares, facilitating the trade of idle ridership capacity for other essentials. This previously unrecoverable expense could then be retrieved and redirected to address more immediate needs, not unlike airlines issuing "miles" against unsold seats, which customers later redeem for non-airline-related offerings, such as a gift card to their favorite restaurant or a proportional credit applied against an amount outstanding. Latent value that can be reorganized into, and represented as, scrip, and subsequently spent as a limited form of money can be considered a form of capital — a *latent* capital.

2.2 New York City's Latent Value Pools

New York's unused and wasted resources extend far beyond cold train seats. However, identifying all possible latent value pools is limited by bureaucracy, data availability, and creativity. To illustrate, a recent analysis of fine collection (Lazenby, 2020) reveals commercial entities make up nearly 80% of violators, yet fail to pay their outstanding balances for code violations (e.g., unsanitary conditions, failure to maintain structural elements in safe condition) nearly half the time — amounting to well over $200 million in uncollected funds. This type of waste is doubly harmful to New Yorkers as lax enforcement perpetuates unsafe conditions, evinced by the May 2023 collapse of the 57 Ann Street parking garage, a building with several critical open violations on the day its floors caved in (McGeehan & Elkeurti, 2023). Most notably, however, the analysis reveals the majority of these unpaid fines are *never* paid; instead, they are typically discharged after the eight-year statute of limitations period.

This wasted $200 million in uncollected fines, along with other wasted value in plain view, such as undeveloped land, vacant commercial parking zones, and off-hours access to parks and public spaces, suggests deep latent value pools exist across New York City,[3] most of which may be uncovered, claimed, and realized with continuing data analyses, effort, and resolve. A preliminary estimate[4] suggests at least $4 billion in latent capital is readily available for deployment, enough to meet the $3.8 billion in expected asylum-seeker costs for the 2024 fiscal year (Office of the New York State Comptroller, 2024).

3 Background

Throughout history, when communities have fallen on hard financial times, they have, intuitively, sought to trade unused resources for other assets that meet their needs. These resources (e.g., precious metals, crops, livestock, etc.) are often unwieldy and trading them requires a double coincidence of wants — hurdles communities have overcome by issuing some easily-traded voucher, certificate, or note — i.e., scrip — against them. The underlying idea is similar to an IOU backed by collateral. When this IOU is traded on the open market, it effectively serves as a working substitute for legal tender.

In North America, scrip use is long-established tradition. The American colonies, for instance, issued and used "Colonial scrip" to ease local trade in place of hard-to-get British pounds, and the English parliament's subsequent suppression of scrip use was one of the grievances that led to the American Revolution (see Declaration and Resolves of the First Continental Congress, 1774). Later, as a nascent United States, scrip eased the financial system's episodic growing pains. Before establishing

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[1]The single highest day for subway ridership was recorded October 29th, 2015, with trains carrying 6,217,621 passengers. "Full capacity" is a normative statement; a daily commuter in New York may have an entirely different definition of "full" compared to a daily commuter in Tokyo or Mumbai, for instance, and so we avoid defining "absolute fullness" as this condition would likely be unacceptable to most NYC riders, and instead focus on a tangible capacity measure — "most riders in one day, ever" — to define a level of fullness that can actually work in the real world.

[2]See Appendix for calculations.

[3]An overview of latent value pools is maintained here: https://www.github.com/blockchainsure/scripnyc

[4]Estimates will also be maintained at https://www.github.com/blockchainsure/scripnyc

the Federal Reserve discount window, bank clearing houses — associations of banks that settled (or "cleared") their mutual obligations — would issue short-term credit instruments, called "clearing house loan certificates," to relieve cash shortages (Moen & Tallman, 2010). Though intended solely for interbank transfers, some clearing house certificates circulated hand-to-hand, becoming commonplace, backed by bank securities held in escrow (Cannon, 1910; Thies, 2020).

During the Great Depression, when widespread bank holidays limited cash flows, communities throughout the United States implemented scrip as an emergency measure, sometimes exchanging them for necessities (Fishback, 1986), or using them as a form of short-term credit (Gatch, 2012). There were at least 95 known scrip issues by American cities in the 1930s (Harper, 1948), including Atlanta, Detroit, Chicago, and Atlantic City, and thousands more issued by communities and businesses throughout North America during the same period (see Mitchell & Shafer, 1984).

Today, scrip is successfully used by local communities worldwide. In the 1990s, Conjunto Palmeiras, a shanty town near Fortaleza, was provided few basic amenities from the Brazilian authorities, despite supporting over 30,000 residents (see Kennedy et al., 2012). The local people had heard of government micro-credit, but the area was so impoverished it lacked sufficient infrastructure to support it. After a few years of experimentation with informal micro-credit loans backed by international organizations, the community adopted *Palmas*,[5] a scrip residents borrowed to start businesses or use for local consumption, which they paid back in national money, or in labor, depending on ability.

In the last thirty years, the Palmas program has grown into a network[6] of 52 community banks, spurring over 3000 businesses, and bringing economic opportunity and employment to tens of thousands.

On the opposite hemisphere, in Switzerland, members of the WIR collective[7] use scrip to purchase goods from one another, as well as lend or borrow via a de facto second bank function, in which transactions are settled using both Swiss francs and WIR scrip. The collective tracks scrip usage to build and analyze member creditworthiness and, remarkably, an analysis (Stodder, 2000) of the WIR system has shown it plays a significant role in stabilizing Switzerland's economy.

In the United States, Berkshire Farm Preserve Notes,[8] sanctioned by the Massachusetts State Agriculture Department, are credited with saving small farmers, acting as informal bridge-loan financing, allowing them to meet financial obligations by issuing scrip against their next crop harvest (see Kennedy et al., 2012). Americans, however, are most likely to encounter scrip in common use through corporate loyalty programs, such as airline miles, credit card reward "points," and dollar-equivalent coupons (e.g., "CVS Extracare Bucks"[9]).

4   SCRIP.NYC System and Approach

Humanitarian funding for emergency migrant needs appears increasingly politically contentious (Slater et al., 2024). Sustainability and independence are thus emphasized for any scrip issuance, with preference that little to no federal or state funds be requested or spent to create or maintain it. Instead, we propose fully backing scrip with New York City's existing deep and varied latent value pools, prioritizing those due to become waste. The resulting latent capital can subsequently be directed towards defraying emergency humanitarian expenses. Given the factors considered in scrip formation may vary substantially across regions and cultures, we propose Scrip.NYC — a solution tailored specifically to New York City.

To facilitate data collection and enhance transparency, Scrip.NYC is entirely digital, with no physical notes printed. This eliminates the need to train users to detect counterfeits, eases the aggregation of user data, and enhances fraud-prevention efforts without hindering the flow of scrip. To minimize confusion, Scrip.NYC is denominated 1:1 in U.S. dollars; however, there is no intention for scrip to substitute or replace legal tender; instead, Scrip.NYC will support the local economy through a limited range of functions, with this limited fungibility being the primary differentiator between scrip and national money.

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[5]https://bancopalmas.com

[6]https://fbes.org.br

[7]https://www.wir.ch

[8]These notes helped form the foundation for the BerkShares scrip: https://berkshares.org/

[9]https://www.cvs.com/extracare/overview

Scrip.NYC intends to replace some direct U.S. dollar disbursements, and will be fully secured at all times to maintain both program credibility and meet redemption demand should any unexpected public panic ("scrip run") arise. If, for instance, Scrip.NYC is backed by off-peak excess capacity on subway trains, users should be able to redeem scrip for subway fares to be used during permitted times. Scrip.NYC's economic size may thus be increased at will by adding to its redeemable asset pool, which may include novel or creatively-structured latent value assets; for instance, allowing users to use Scrip.NYC to pay supplementary penalty fees for outstanding fines (but not the outstanding fines themselves, which are a source of revenue for the city[10]) or tuition fees for unfilled CUNY[11] seats.

4.1 Dk0.xx Demurrage

Demurrage is a charge levied on currency holdings to disincentivize hoarding. Scrip.NYC is subject to a demurrage charge, called *Dk* ("decay"), a fee deducted immediately upon a user's acquisition of any Scrip.NYC amount, and again at the start of each subsequent day. The rate of decay, *0.xx*, is a fixed measure, mathematically equivalent to a negative interest rate. The proceeds of Dk0.xx are used to fund the administration, storage, and other costs associated with maintaining the Scrip.NYC network.

4.2 The Metrocard and OMNY systems

In the New York City context, leveraging existing technology and infrastructure — namely, the Metrocard[12] and OMNY[13] systems — would bring substantial cost savings and efficiency with low technology risk. Specialized Metrocard and OMNY accounts that grant additional features or restrictions to a limited number of users, such as high school students or the FairFares[14] program, are already implemented widely, and demonstrate these systems can readily accommodate Scrip.NYC's core functions. Furthermore, users are already familiar with these systems, already have Metrocards and/or the OMNY mobile application (or card) in their possession, and can readily check stored balances without regular computer access.

Expanding any system to accept Scrip.NYC involves building or adapting, and then connecting, a payment channel, allowing vendors to credit or debit segregated scrip value to user accounts. In other words, this means user accounts would hold two categories of value: one type to be used as regular fares for subways and buses, and another type that could be used for fare payments during off-peak hours, used with participating vendors for defined goods and services, exchanged freely among other users, or redeemed for its underlying latent value asset. In particular, an OMNY-exclusive implementation of Scrip.NYC would likely greatly reduce operational costs, as vendors across the city who sell OMNY cards already possess devices for activating new cards, which may be upgraded to credit or debit specific amounts to user accounts or, as an alternative, requisite features may be enabled through an upgrade to the OMNY mobile application.

4.3 A Benefit Card Alternative

In the event OMNY and Metrocard are found unsuitable for Scrip.NYC, the electronic benefits transfer (EBT) card[15] may be an alternative. The benefits card is widely used throughout New York City and encompasses many of the same features of OMNY and Metrocard; however, it may require the development of additional value transfer functionality between EBT cards and transit fares.

4.4 A Blockchain Alternative

An entirely independent alternative leveraging public blockchains is also possible. The principal implementation challenge is to accurately record transactions across hundreds of thousands of users, maintaining a high degree of security, accuracy, and trustworthiness, while allowing users some oversight so they may more easily adapt limited scrip fungibility to their changing needs. This is not without precedent: Singapore's Project Orchid (Monetary Authority of Singapore, 2022) utilizes a public blockchain

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[10]Fines and fees are booked as "miscellaneous revenue"; see Bureau of Budget (2016) for an overview.

[11]The City University of New York (CUNY) has 25 colleges across the five boroughs: https://www.cuny.edu/about/

[12]https://new.mta.info/fares

[13]See footnote 12

[14]See: https://nyc.gov/site/fairfares/index.page

[15]See https://otda.ny.gov/workingfamilies/ebt/

to disburse some public benefits. Blockchains are equivalent to a counterfeit-resistant shared digital ledger and, in the context of Scrip.NYC, the use of a secondary blockchain ("L2"), appended to an existing public blockchain ("L1"; e.g., Ethereum[16]), would allow the program to implement spending limits across multiple selected vendors, while maintaining near-zero transaction fees and, concurrently, limit user fraud, abuse, and counterfeiting.

More specifically, a secondary blockchain inherits the security of the underlying primary blockchain by demanding L2 transaction data be verified and confirmed by the L1. Vendors authorized to use or distribute scrip can be strictly controlled using an L2 (as opposed to an open, public L1), and transaction throughput and fees can be adjusted to reduce frictions.

Zero-knowledge rollups ("ZK-rollups") are a category of L2 focused on user transaction privacy. Transactions are processed on the L2 using zero-knowledge proofs (Goldwasser et al., 1989) to verify transaction details without exposing sensitive user information, with state roots and transaction data posted back to the underlying L1. A ZK-rollup-based L2 solution may therefore be preferred to obscure individual transaction data from public view. However, the open nature of public blockchains deserves careful consideration; though secured by waste, Scrip.NYC may bring undue attention to resource management across city agencies (i.e., public outrage over waste volumes may arise), and an openness to unlimited public auditing of scrip activity may provide supplementary political capital as well as substantial counterbalancing to any negative sentiment. The increased transparency from distributed public ledgers, allowing all users to track each scrip unit at all times, may impart substantial anti-corruption[17] advantages in addition to its inherent anti-counterfeiting reliability, making blockchains preferred over a purpose-built closed-system payment application.

5   Legal Scruples

The federal constitution forbids state bills of credit (U.S. Const. art. I, §10). In *Briscoe v. Bank of Commonwealth of Kentucky* (1837), the Supreme Court ruled a private bank may issue notes on its own credit, but not on the credit of the state; hence, the State of New York should avoid any significant official involvement with Scrip.NYC, except perhaps to present guidelines under which cities may issue or regulate scrip and make clear, through official notice, that Scrip.NYC is neither backed nor guaranteed by the faith and credit of the state. Importantly, such support is entirely unnecessary; Scrip.NYC can be issued as an obligation of a specific agency or entity (thus avoiding constitutional conflicts) and fully secured by the pledge of specific forms of latent value waste.

In the past, municipalities used legal creativity to avoid calling scrip "money" (see Gatch, 2012). Benton Harbor, Michigan, for instance, called their scrip a "delinquent tax warrant," to be used for satisfying delinquent tax bills, while Lorain, Ohio called theirs a "tax anticipatory note," offering holders a discount for paying their taxes in advance. Atlantic City simply called theirs a scrip. Generally speaking, Scrip.NYC should not involve language indicating a legislative intention to provide a currency, and it should be clear to all users that Scrip.NYC is not legally a currency. Furthermore, Scrip.NYC should incorporate features that highly differentiate it from legal money. At no time should Scrip.NYC be made a general, or even a limited, legal tender: merchants should never be required by law to accept scrip payments, and users should be prohibited from paying taxes with scrip — both of which may be construed as signals of promoting scrip as legal money. Additionally, businesses should be prohibited from paying wages in scrip: it is illegal to do so under the Fair Labor Standards Act of 1938 (1967).

Making Scrip.NYC redeemable for specific reserved commodities, resources, or assets arguably serves to facilitate the scrip's redemption, and not to promote its circulation as money. Mandating its cancellation upon payment into a managing entity's treasuries, rather than allowing scrip to be re-issued, emphasizes the scrip's purpose as a redeemable voucher rather than a circulating medium.

6   Inflation Considerations

The prevailing view among policymakers is that inflation is the result of excessive government spending: monetary expansion at a rate faster than economic output. Scrip.NYC is designed to counteract this

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[16]https://github.com/ethereum

[17]Re-directing billions of dollars, even via scrip, will undoubtedly incentivize acts of corruption.

effect, albeit locally, by financing the fiscal rescue of vulnerable persons with various forms of trash, glut, and inefficiency, instead of money. Importantly, these wasted resources were largely purchased with state and government funds; Scrip.NYC then, does not demand additional government social spending per se; instead, it ensures already-purchased assets are redirected away from the waste heap and applied meaningfully towards improving New York City.

Modern views of inflation are dominated by the Quantity Theory of Money (QTM), based on Fisher's (1922) equation of exchange:

$$MV = PT$$

Where M = some measure of the money supply
V = velocity; the average number of transactions made by each currency unit per unit time
P = average price level
T = volume of transactions made using money represented in M

Introducing scrip ostensibly changes the definition of, and increases, M, thereby potentially increasing the price level (and/or transaction volume); however, combining Scrip.NYC and national money into a single term, M, conceals their individual effects on P. Instead, Scrip.NYC's impact on inflation can be more precisely examined through T, the number of transactions conducted in national money.

Existing transactions made entirely in scrip decreases the the number of national money transactions (T), consequently increasing the price level, P; hence, substituting scrip in dollar-denominated transactions is inflationary. However, in dual-currency transactions, where both scrip and dollars are used, T increases since average dollar amount per transaction is reduced, thereby incentivizing[18] users to enter more transactions, bringing about a deflationary force on prices, P.

Previously, a "tax anticipation scrip" (see Gatch, 2012) has been used to pay taxes with some degree of success; however, fiscal theory (see Cochrane 2021, 2022) suggests accepting Scrip.NYC for tax payments may artificially inflate the present value of real primary surpluses,[19] resulting in rising prices. Accordingly, no Scrip.NYC should be accepted for tax payments. Additionally, transactions conducted entirely in Scrip.NYC should be non-taxable, to preclude the possibility of significantly impacting primary surpluses, with dual-currency transactions taxed only on dollar-denominated amounts, to reduce all-scrip transaction incentives.[20]

Finally, any increased demand associated with scrip usage does not imply the local economy is at capacity. Indeed, considering substantial and increasing commercial property vacancies (Haag, 2024), signaling a decline in local spending, and over a half-million residents leaving New York City since April 2020 (see United States Census Bureau, 2023), it is highly likely that New York City's economy can readily absorb unexpected demand from the roughly 210,000 migrants (see Ferre-Sadurní, 2024) currently under the City's care, representing roughly 2.5% of the population (note: 210k/8.258m; see footnote[21]), and just 0.2% of the local economy.[22] It is doubtful scrip transactions will raise local price levels, even with an unexpected surge of economic activity.

7   A Usage Scenario

After a months-long trek, Daniel arrives in New York City and applies for asylum. He is welcomed by Maria, a migrant from Daniel's home country who arrived a year earlier, and now volunteers five times

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[18]Friedman (1969) suggests Scrip.NYC users would enter these additional transactions to adjust their money holdings to their preferred optimum.

[19]"Primary surpluses" is defined as the difference between taxes and transfers. In Cochrane's (2021, 2022) work on the fiscal theory of the price level, the price level — i.e., "inflation" — adjusts so that the real value of government debt is equal to the present value of real primary surpluses. Thus, accepting scrip for tax payments would mean more dollars in circulation, creating more buyers than sellers: too much money chasing too few goods. This situation would increase overall tax revenues, and correspondingly increase primary surpluses, ergo raising government debt levels — and inflation — accordingly.

[20]Taxing full amounts — the combined total of U.S. dollars and scrip — in dual-currency transactions incentivizes users to enter tax-free all-scrip transactions. Whereas solely taxing dollar amounts in dual-currency transactions simultaneously satisfies some demand for dollars from sellers, and payment discounting demand, through lower single-transaction tax payments, from buyers.

[21]The population of New York City is 8,258,035 (United States Census Bureau, 2024).

[22]2022 GMP for New York City is $1.87 trillion (Statista Research Department, 2024). $3.8b/$1.87t = 0.002

a week to provide civic training for new arrivals. During the training, Daniel learns about the transit system, some local laws and customs, and how and where to use the $2000 in scrip all applicants receive upon arrival.

As a volunteer, Maria receives a daily scrip stipend for her expenses. She uses some for food and some for housing. Trained as a nurse in her home country, Maria was matched with an older adult through a community-based caregiver program and, after a six-month trial, the older adult invited her to sublet a room in her home. Her rent is paid entirely in scrip, which the older adult uses for daily deliveries of hot food from a community kitchen.

As a regular, Maria introduces Daniel to the community kitchen — a community-run program using commercial kitchens during off-hours to prepare traditional meals using fresh leftover foods and goods. The fare is cheap and delicious; $10 for a meal, but $7 of it can be paid in scrip, and volunteers working at the kitchen can pay for the meal entirely with scrip. Consequently, there are hundreds of willing volunteers, and dozens of similar kitchens throughout the city, preparing migrants for future jobs in the food industry or, in Daniel's case, to fulfill his lifelong dream of opening his own restaurant. During breaks, volunteers like Daniel gossip about the kitchen's successes, as well as "The Fund": community residents enjoy ordering food from the kitchen so often that they started selling bonds to raise restaurant start-up funds for their favorite chefs, with dividends paid in scrip that bondholders can use exclusively at these new restaurants.

Businesses also use scrip for exclusive benefits. Some purchase scrip to redeem them; for instance, to support employer-sponsored programs (e.g., MBA degree) at CUNY, or for holiday events held during off-peak hours at city parks. Others use scrip as a form of financing when making deals with others in the scrip community, finding it helps them rapidly build their business and credit. Notably, scrip is also used in an increasing number of real estate transactions, since the city accepts it for settling a variety of code violations and penalties, and many contractors accept partial scrip payments, reducing renovation costs.

8   Conclusion

We have proposed a scrip system for redirecting New York City's unused resources to meet shortfalls in emergency funding. Pools of reclaimable waste are identified, and methodology for leveraging these pools to implement a local scrip addressing New York City's particular needs is described. To disincentivize users from hoarding scrip, we have proposed a rate of decay. To solve the problem of inflation through monetary expansion, we have proposed dual-currency transactions across the scrip-use region — in addition to prohibiting their use for tax payments, while concurrently expanding their use to include non-revenue-essential fee or penalty payments.

In summary, Scrip.NYC offers a practical, renewable, and scalable solution for emergency humanitarian funding. Implementation is disproportionately low-cost and low-risk, with high potential reward, illuminating an alternate, sustainable way forward for New York City.

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U.S. Const. art. I, § 10.

APPENDIX

Subway Capacity

Ridership capacity is a normative — not absolute — measure. We can, for instance, calculate capacity based on the number of humans that can physically fit into a subway car, but, under real-world conditions, riders may refuse to ride in a train car with no physical space between passengers. Therefore, a practical proxy measure for "full capacity" is used; namely, the greatest single-day subway ridership level: 6,217,621 passengers, recorded on October 29th, 2015.

We use the weekday subway ridership averages in our calculations because weekends bring lower ridership, which would lead to underestimates over time.

Comparing capacity (6,217,621 passengers) against the average weekday subway ridership in 2023 of 3,625,326 passengers, reveals a difference of 2,592,295 or 58.3%.

2,592,295 passengers assumed to pay a $2.90 fare for their trip equals $7,517,655.50 in lost fare revenue. Using the full fare of $2.90, without regard to riders qualifying for reduced or free fare payments, is reasonable in these calculations as they relate to unused subway capacity to be exchanged via scrip, with each unit of account for an individual fare equivalent to $2.90. As such, calculations should be based on ridership data, not total revenues collected by the MTA, as we are extrapolating the backing of Scrip.NYC using whole and not partial fares.

$7,517,655.50 per day in a 30-day month is $225,529,665 in lost fare revenue for that month. $7,517,655.50 per day across 365 days is $2,743,944,257 in lost revenues for the year.

NOTE: 2023 ridership figures taken from MTA website: https://new.mta.info/agency/new-york- city-transit/subway-bus-ridership-2023