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1) Introduction

The economic crisis of 2001-2002 had many repercussions for Buenos Aires' labour market, including a drastic increase in the number of informal recyclers who took to the streets to recover recyclable materials from the waste stream. In 2007-9 when this study was conducted, the municipal government estimated that there were approximately 5,000 *cartoneros* (as these workers are locally known) in Buenos Aires (Gutman 2008).

This paper addresses the ways that *cartoneros* rally the diverse resources that they have at their disposal in order to mitigate some of the risks associated with their work (including health issues, threats of violence, the precariousness of their work, stigma, low-incomes, and poor living and working conditions). In this analysis, I apply Moser's Asset Vulnerability framework as a rubric for understanding *cartoneros*' coping strategies, and I discuss the precarious nature of many of the assets that these low-income workers regularly mobilize. I argue that there are risks embedded in certain assets, particularly those that are most readily available to low-income urbanites in the Global South. In other words, the assets/vulnerabilities dyad does not adequately account for the unstable nature of many of the resources that poor urbanites must rely upon. Not all assets are created equal: precarious assets can introduce vulnerabilities into a person's life, and thereby erode the sustainability of their livelihood. Understanding these interactions is important for the theorization and application of livelihoods approaches to poverty alleviation.

The research for this paper was conducted between 2007 and 2009, and is based in a survey of 397 *cartoneros* who were approached while working in the city streets. The survey was conducted in ten sites throughout the city of Buenos Aires regularly frequented by *cartoneros*. In

each site, researchers walked a randomized route of 100 city blocks in length and approached each *cartonero* encountered on the route. The refusal rate for the survey was 17%. The survey addressed topics of working conditions and practices, living conditions, health, social capital, access to social services, home and community life, and demographic information. Follow-up interviews were conducted with 30 *cartoneros* selected to represent the geographic and socio-demographic diversity of the survey sample. The interviews explored the themes of the survey in greater qualitative depth. Respondents to both the survey and interviews were offered a \$10 peso (approximately \$3.33 USD) stipend in recognition of the time taken away from their work. Four local research assistants (all of whom had experience working with *cartoneros*) assisted with the surveys and the interviews. The author participated in about 1/3 of the surveys and all of the interviews, and has provided all of the translations of the interview data in this paper. Statistical analyses were conducted on the survey results: all results presented below are significant at the $p \leq 0.05$ level, and details on the statistical analyses used (i.e. chi-squared analysis, correlation, ANOVA, and t-test analysis) are provided in the notes.

2) Livelihoods and the Asset Vulnerability Framework

Chambers and Conway (1991) seminally describe sustainable livelihoods as follows: “A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long-term.” The livelihoods approach to poverty alleviation provides perspective on the complexity of factors that influence the lives of

low-income persons in the Global South. This approach recognizes the agency and ingenuity of the poor, and offers strategies for assessing and addressing the issues that impact their quality of life. The livelihoods approach to understanding poverty recognizes that people actively draw on and transform various social and material assets in order to meet their needs (Chambers & Conway, 1991; Steel & Zoomers, 2009), while also dealing with multiple vulnerabilities that can take the form of either acute stressors (such as economic crises) or chronic stressors (such as declining resource stocks; Marschke & Berkes, 2006). Implicit to the livelihoods approach is an understanding of the flexibility of assets, and the capacity for individuals to make trade-offs between different assets in order to meet their needs and mediate vulnerabilities (De Haan, 2012; Morse & McNamara, 2013).

Developed in response to the extensive focus of livelihoods research on rural communities, Moser's (1998) asset vulnerability framework represents a livelihoods approach to systematically analyzing the relationships between the assets and vulnerabilities relevant to the urban poor in the Global South. This work is situated in an agenda of structural poverty reduction, and focuses on how to "strengthen people's own inventive solutions, rather than substitute for, block or undermine them" (p.1). Moser focuses on five assets: labour, human capital (including health status, skills, and education), productive assets such as housing, household relations (primarily as a mechanism for pooling resources and sharing consumption), and social capital. Her concept of vulnerability recognizes that people can move in and out of poverty; vulnerability is therefore a state of predisposition to ecological, economic, social, and political risks that may threaten one's assets, rather than a measure of material poverty. Moser describes coping as a dynamic process of managing complex asset portfolios in light of multiple vulnerabilities, and cautions that the

complexities of the coping process need to be appreciated in order to avoid overly simplistic policy interventions.

The livelihoods paradigm has made important contributions to the theory and practice of poverty alleviation, and has had widespread uptake among development agencies, including the World Bank, a number of international NGOs, and state-based international development programs. Because of its strengths as an assessment and diagnostic tool, the livelihoods framework has lent itself to the design and implementation of asset-related interventions. In particular, “asset accumulation” has become a common poverty alleviation strategy pursued by development institutions. This strategy involves “creating opportunities for the poor to accumulate and consolidate their assets in a sustainable way” (Moser, 2006, p.11). This paradigm purports that proper support and protection of assets will allow households to engage in “virtuous asset accumulation strategies, rather than asset eroding paths” (Wheeler & Haddad, 2005).

A common trend in development practice is to focus on key assets that allow low-income urbanites to better meet their other needs (e.g. Mitlin, 2003). While there have been numerous programming successes based in this approach, asset accumulation programs have also been critiqued for their limited focus on particular assets (notably, social capital and financial capital), the inconsistent assessment of assets (Bebbington, Guggenheim, Olson, & Woolcock, 2004), myopic perspectives on the types of interventions that may bolster particular assets, and a non-critical view of the social and economic conditions that lead to poverty and inequality in the Global South. Because of these limitations, asset accumulation strategies may not lead to a meaningful change in livelihoods. For example, with respect to the accumulation of financial capital, development actors have focused on the proliferation of microcredit loans as a livelihood strategy, although it has been observed that the promotion of micro-borrowing can lead to poverty traps of

indebtedness (Gehlich-Shillabeer, 2008). Similarly, social capital has been celebrated as the ‘missing link in development’ by the World Bank and others (Grootaert, 1998). However, many approaches to accumulating social capital do not adequately address the overarching social structures that exploit or constrain relationships and connections for some people, such as patriarchy (Kantor, 2009; Molyneux, 2002; Thieme & Siegmann, 2010), caste/tribe designation (Arun, Annim, & Arun, 2013), race/ethnicity (Portes, 1998), and other insider/outsider dynamics. Mensah (2012) argues that a categorical perspective on assets eclipses analyses of the availability and utility of these resources, and notes that not all assets are equally accessible for all users.

While the livelihoods approach does recognize that access to assets may be mediated or constrained by societal forces, some critics persist in describing this conceptual framing as individualistic. The focus is often on the efforts of localized individuals to mediate their vulnerabilities rather than on the larger political and economic forces that lead to and perpetuate poverty, thus detracting attention from the kinds of structural change that could potentially address poverty at a macro-scale (Carney, 2003; De Haan, 2012; Small, 2007). Others argue that a focus on the efforts of localized individuals to mediate their vulnerabilities rather than on the larger political and economic forces that lead to and perpetuate poverty may detract attention and resources from structural changes that could redress inequalities and injustices at a macro-scale (Anderson, 2012; Carney, 2003; De Haan, 2012; Small, 2007). Such perspectives emphasize the importance of centring a livelihoods analysis on the vulnerability context of low-income urbanites, including macro-level vulnerabilities such as economic and political change.

Importantly, livelihood approaches to poverty alleviation (and asset accumulation strategies in particular) focus on the conceptual separation of assets from vulnerabilities. Proponents of these paradigms acknowledge the complex interplay between different assets, and

the limitations of such relationships for poverty reduction efforts: “...because of the interconnections between different assets in the portfolios of the poor, the effect of a program targeted to one asset may be misleading in terms of its poverty-reduction impact” (Moser, 2007; p. 9). However, there is little acknowledgement of the dynamic relationships between assets and vulnerabilities, which can also have implications for poverty reduction interventions.

Beyond categorizing and listing the assets available to low-income urbanites, it is therefore important to develop a more nuanced understanding of the ways that vulnerabilities can be inherent to certain types of assets, while also considering the on-going interplay between assets and diverse vulnerability contexts. In particular, livelihoods approaches to conceptualizing and addressing poverty would be strengthened by a more thorough assessment of the ways in which certain assets may inherently contribute to a person’s or group’s vulnerability, as well as context-specific assessments of the ways that macro-level vulnerabilities (e.g. economic change; political change; systems of gendered, racialized, and intergenerational power relations) influence the accessibility and quality of different assets. Such an assessment can provide insight to the contextual factors that prevent the development of a robust portfolio of assets, and allow for improved understandings of what makes livelihoods sustainable.

In the following analysis, I present the prominent vulnerabilities and assets that influence the livelihoods of *cartoneros* in Buenos Aires, and detail the interplay between them. Many of the assets available to these informal workers are precarious and are not consistently accessible, indicating that this livelihood may not be sustainable in a long-term sense. This is not to disparage the capacity of *cartoneros* to build livelihoods; they do so on a regular basis, but must often engage in asset trade-offs and new livelihood strategies in order to address the vulnerabilities they face. In effect, they are creating new livelihood constellations on a regular basis. On an individual basis,

this is a laudable outcome. From a systemic perspective, the precariousness of those assets most accessible to these low-income and socially marginalized urbanites is indicative of the unsustainability of this livelihood. The analysis begins with a description of *cartoneros*' vulnerability context, and proceeds with an assessment of their key assets as identified in the asset vulnerability framework. I use this case study to demonstrate the importance of considering the context-specific interplay between assets and vulnerabilities when assessing the sustainability of a livelihood.

3) Vulnerability Context of *Cartoneros* in Buenos Aires, Argentina

3.1 Overview of the vulnerability context of low-income urbanites in Buenos Aires

Cartoneros regularly work on city streets sorting through curbside trash to find materials that can be sold at local depots (such as cardboard, metals, plastics, and glass), as well as objects that can be reused (such as household goods, clothing, and building materials). Most surveyed *cartoneros* reported that they worked 5 or 6 days a week, with an average of 6.2 hours a day collecting materials (in addition to time spent sorting, cleaning, and selling materials). The highest densities of *cartoneros* can be found working in affluent residential neighbourhoods and commercial districts in Buenos Aires, where the contents of the waste stream tend to be higher value. Their public presence is therefore both conspicuous and representative of the urban inequality that pervades Buenos Aires.

In particular, the rise of informal recycling in the years following the 2001-2 crisis was a notable indicator of changing social and economic contexts in Argentina. Between 2001 and 2002, Schamber (2002) observed a five-fold increase in the number of *cartoneros* entering Buenos Aires via the Alsina bridge (a major entry point to the city). This increase in informal recycling work

was the result of rising unemployment rates in combination with rising costs for imported industrial materials following the crash of the Argentine peso (Parizeau, 2013). The combination of unemployed workers and a need for low-cost domestic inputs for industry led to the widespread informal recovery of materials from the trash stream.

Beyond impacts on informal recycling work in Buenos Aires, this time of economic change contributed to a broader context of social vulnerability in Argentina. Those most severely impacted by the crisis included the poor and middle classes (Rodriguez-Acosta & Rosenbaum, 2005). Decades of failed economic planning from the 1970s onwards and national structural adjustment policies in the 1990s led to increasing unemployment and ballooning external debt (Weaver, 2000; Escudero, 2003; Gallo, Stegmann, & Steagall, 2006). The 2001-2 economic crisis led to a wave of mass unemployment and increased levels of poverty. Using national survey data, McKenzie (2004) observed that 78% of households experienced real income declines in 2002, with 63% of households experiencing an income drop of at least 20%.

The years of structural adjustment and crisis have also led the restructuring of the labour market and the health care system in Argentina. The flexibilization of labour law through structural adjustment measures led to the institutionalization of precarious and low paid work, essentially blurring the line between informal and formal work (Olmedo & Murray, 2002). Whitson (2007) argues that the increased flexibilization of the work force in combination with the decreased availability of formal work led to the highest levels of informal workers participating in the Argentine economy in 60 years (up to 60% of workers in 2002). Furthermore, the economic crisis of 2001-2 led to the weakening of the national health care system, including reduced access to medicines and health services among the poor (Bernztein & Drake, 2009), decreased health benefits provision for the elderly (Montero-Odasso, Przygoda, Redondo, Adamson, & Kaplan,

2004), widespread loss of employment-based health insurance coverage (Iriart, Waitzkin, & Trotta, 2002), and decreased job security among health services providers (ibid).

Grugel and Riggirozzi (2007) describe the post-crisis era as neodevelopmentalist (*neodesarrollismo*) – a governance strategy introduced with the election of President Néstor Kirchner in 2003. They characterize this approach to economic recovery as government-led economic stimulation, focusing on the rebuilding of industry, public works, and public services, as well as the deferral of external debt repayment until 2005. A 20% export tax has become an important source of funding for anti-poverty programs introduced post-crisis, including the *Programa Jefas y Jefes de Hogares Desempleados* (Unemployed Heads of Household Program), and the *Asignación Universal por Hijo* (Universal Child Benefit) later introduced by President Cristina Fernandez de Kirchner (Grugel & Riggirozzi, 2012). These efforts assisted in bringing Argentina’s poverty rate to a “normal” 11% as of 2010, in contrast to the 2002 high of 45% (ibid). Furthermore, Argentina’s average annual rate of economic growth was 8.5% between 2003 and 2008, although this growth rate slowed to 0.9% in 2009 following a global recession (Ministry of Economy and Public Finances, 2010). While the neodevelopmentalist approach did lead to economic growth, Kessler and Di Virgilio (2008) note that neither employment rates nor salary increases mirrored the rate of national economic growth in the mid-2000s, when this *cartonero* study was conducted.

The vulnerability context for low-income urbanites (and *cartoneros* in particular) during the mid-2000s was therefore one of fast macro-economic recovery, with slow progress toward poverty alleviation and decreasing unemployment rates. While income assistance programs that came online in the years following the crisis eventually helped to return levels of social inequality in urban Argentina to levels observed in the mid-late 1990s (Lustig, Lopez-Calva, & Ortiz-Juarez,

2013), the trends of flexibilization and informalization of labour as well as a compromised health system contributed to a broader context of vulnerability for low-income persons in Buenos Aires.

Widespread economic and social change in Argentina during the mid-2000s thus influenced the vulnerability context of *cartoneros*. There are also a number of vulnerabilities inherent to curbside informal recycling work that intersect with this broader vulnerability context. Following is a brief overview of the most common vulnerabilities described by *cartoneros*, and those that resonate most with the findings of other studies of informal recyclers in the Global South.

3.2 Low-income work and precarious earnings (vulnerabilities of labour)

As reported in the survey, *cartoneros* earned \$27.92 pesos (approximately \$9.31 USD) per day on average, and the daily median was \$23.33 pesos per person per day (\$7.78 USD). These statistics put these workers at the bottom of the 4th decile for income when compared to Argentines living in urban areas (INDEC, 2007), implying that almost 70% of all urban Argentines with incomes earned more than *cartoneros*. These workers are therefore not the poorest of the poor, but they are low-income workers. Their living conditions confirm this observation: 97% of survey respondents lived in *casillas* or *casas materiales* – structurally basic forms of housing that typify low-income and underserviced residential areas. In comparison, only 22% of all residents of Greater Buenos Aires lived in these types of housing in the closest year for which data was available (INDEC, 2005). Furthermore, comparisons of *cartonero* incomes to the concurrent value of the single adult equivalent Basic Total Goods Basket (*Canasta Básica Total*) for Greater Buenos Aires (which serves as the poverty line for the region) indicate that 24% of *cartoneros* would not have been able to afford the goods necessary for an adult’s basic needs in Buenos Aires at the time

of the survey, and 9% of *cartoneros* fell below the Basic Food Basket (*Canasta Básica Alimentaria*) value used as an indicator of indigence (ibid). Because these incomes often provided for more than just one adult in a household, it is likely that household rates of poverty and indigence were even higher than the above calculations suggest. Nonetheless, it is surprising that such a high proportion of respondents would fall below the poverty and indigence lines, especially considering that this is a working population.

Informal recycling work is also inconsistent: there are no guarantees that *cartoneros* will find a desired amount of recyclable materials on any given night, and the prices paid for collected materials at privately-run depots depend on world material prices and the discretion of individual depot owners. Earnings for recycling work are therefore precarious, and they also depend on the regular ability of *cartoneros* to work. Because this is informal work, there are no paid sick days or vacation time for *cartoneros*. Other observers have also noted the low incomes often associated with informal recycling in the Global South (Wilson, Velis, & Cheeseman 2006; Huysman, 1994; Tevera, 1994; van Beukering, 1994; Agarwal, Singhmar, Kulshrestha, & Mittal, 2005; Hayami, Dikshit, & Mishra, 2006).

3.3 Health issues (vulnerabilities of human capital)

In the *cartonero* survey, 41% of respondents reported having current health problems. The range of problems they reported were broad, and included both health issues that were likely related to their work (e.g. cuts and infections from handling trash, injuries from traffic and from pulling heavy carts, illness related to weather exposure, respiratory problems, etc.), and problems that were not directly related to informal recycling (e.g. cancer, circulatory problems, digestive issues, allergies, diabetes, vision and dental problems, etc.). Overall, 38% of respondents said that

they had missed work for health reasons in the previous year. In addition, 31% of respondents said that they had experienced mental health issues in the past year (including anxiety, nervousness, or depression).

For informal recyclers, health threats from contact with the waste stream are a routine occupational hazard (Ray, Mukherjee, Roychowdhury, & Lahiri, 2004; Da Silva, Fassa, Siqueira, & Kriebel, 2005; Alvarado-Esquivel et al., 2008; Gutberlet & Baeder 2008; Maciel et al., 2010). It has also been observed that the stigmatization associated with informal recycling work can cause psychosocial health issues (Da Silva et al., 2005; Gunn & Ostos, 1992). Furthermore, the social marginalization of these workers can impact their ability and their willingness to seek medical attention when faced with health threats. Argentina has a three-tier health care system, and *cartoneros* are much more likely to rely on the widely-used public system as opposed to the private or insured services that people with employment benefits or the means to pay for access to such systems use: 97% of *cartoneros* reported that they used the public health care tier, as compared to only 45% of the broader population of Greater Buenos Aires (INDEC, 2001)¹. Health vulnerabilities are therefore related to income and labour precariousness since earnings and employer benefits influence access to certain health care resources.

3.4 Stigma, discrimination, and conflict (vulnerabilities of social and human capital)

Stigma and discrimination against informal recyclers is widespread in the Global South (Furedy, 1992; Gunn & Ostos, 1992; Huysman, 1994; Assad, 1996; Kaseva & Gupta, 1996; Medina, 2000; Hayami et al., 2006; Sembiring & Nitivattananon, 2010). The stigma that is associated with informal recycling may be attributed to the marginal social status of many of these workers, and may also be connected to the centrality of waste (a culturally abject entity) in this

work (Gil Villa, 2005). Discrimination and social stigma were common themes in the interviews with *cartoneros*:

Because sometimes you go along walking and... you see a lady thirty metres away and she closes the door quickly because she is afraid, she is afraid because of our appearance or because of what's happening [informal recycling]. (49 year old man)

Sure, they feel really important, more clean. We are the dirty ones. It's not like that. We are ordinary people, like them. Because they have an extra peso in their pocket, they aren't more than us. We are all the same, we are all human beings. (20 year old man)

Stigmatization and discrimination can therefore interfere with the relationships that *cartoneros* have with other residents of the city, as well as one's ability to access resources like health care, education, and police services, suggesting that stigma may represent a vulnerability to human capital. Social marginalization can also lead to social exclusion and conflict. In the survey, 31% of respondents reported conflicts with the police, some of which became violent. Men more frequently experienced conflicts with the police than women ($p = 0.023$),² suggesting that susceptibility to police interference is a gendered phenomenon in Buenos Aires. Overall, 54% of survey respondents reported that they experienced some type of conflict associated with their work (either with police, other *cartoneros*, residents, doormen, or depot workers), and so social discord was an important experience for the majority of these workers.

Having considered prominent aspects of *cartoneros*' vulnerability contexts, the following analysis of *cartoneros*' coping strategies proceeds categorically according to asset, and discusses the multiple types of vulnerabilities addressed and produced by the deployment of each asset. The discussion centres more on some assets and vulnerabilities than on others. This is both because of the particular foci on health and social capital in the research questions underlying the design of this study (choices that were influenced by the predominance of these issues in the livelihood literature), and because of the greater relevance of certain assets and vulnerabilities to informal recyclers in Buenos Aires.

4) Social Capital

4.1 Conceptualizing social capital

Moser's description of social capital is "reciprocity within communities and between households based on trust deriving from social ties" (1998, p.4). She observes that mobilization of this asset can manifest as increases in informal credit arrangements, increases in informal support networks, and increased community-level activity. According to Cullen and Whiteford (2001), social capital has both cognitive components (such as trust) that encourage interaction and social support, and structural components that describe the forms of networks that connect people to one another, usually described as either horizontal or vertical connections. Horizontal connections include bonding social capital (or 'strong ties' between close family and friends, associated with interpersonal support, aid, information sharing, enforcement of norms, and the control of deviancy), and bridging social capital (less intimate personal relationships across ethnic and occupational differences, which are important for social and economic development). Vertical connections are also known as linking social capital, which brings together people with different

levels of social influence, such as the connections between community members and representatives of the government or public sector.

4.2 Social capital and vulnerabilities

It is known that collective resources can help mediate health shocks. For example, perceived emotional support can buffer the negative health effects of chronic and acute stressors (Thoits, 1995), and social networks can provide people with information about health care services and treatment options (Montgomery & Ezech, 2005; Edgeworth & Collins, 2006). Among *cartoneros*, the cognitive aspects of social capital appear to be related to health protective behaviours and better health outcomes, and thus to reductions in health vulnerabilities. Respondents who trusted doctors and nurses went to a doctor when they experienced health problems more often than those who did not trust these health professionals ($p = 0.02$)³, and higher respondent scores on a composite trust index were significantly correlated with more recent visits to a pharmacy ($p = 0.04$).⁴ Structural characteristics of social networks were also statistically related to health outcomes. A lower proportion of those who agreed or strongly agreed with the statement that they could depend on a friend when they needed a favour had mental health issues in the past year ($p = 0.05$)⁵ or reported health problems at the time of the survey ($p = 0.01$)⁶. Similarly, those who said they could depend on other *cartoneros* reported fewer health problems ($p = 0.03$)⁷. These results support findings from the literature that strong social networks can have protective health benefits among low-income people (Khawaja, Abdulrahim, Soweid, & Karam, 2006; Sun, Rehnberg, & Meng, 2009).

However, those who do have health problems also have active social relationships. A higher proportion of those who reported having mental health problems in the previous year joined other

cartoneros or neighbours to take action on a shared issue of interest in the previous year (joined *cartoneros*: $p = 0.01$;⁸ joined neighbours: $p = 0.01$ ⁹). A higher proportion of respondents who were members of either a work co-operative or another social organization of some type reported having health problems at the time of interview ($p = 0.00$)¹⁰ and missed work for health-related reasons in the previous year ($p = 0.01$).¹¹

There therefore appears to be a contradiction with respect to social capital and health outcomes: those who reported strong cognitive aspects of social capital (trust and ability to depend on others) experienced health protective benefits, whereas those who engaged in social support activities (taking collective action or participating in organizations) were more likely to have health problems. In these cases, it is difficult to assess causality: were people entering into reciprocal relationships with neighbours and residents or taking part in collective action in order to mediate the vulnerabilities (health and other) they were already experiencing, or were they experiencing mental and physical health problems because they were overextending themselves through their social relationships (see Modie-Moroka, 2009)? As de la Rocha (2007) describes, the long-term stresses of poverty can lead to the overuse and erosion of assets related to social networks. Similarly, Goudge et al. (2009) suggest that the relationship between social capital and health is mediated by other factors, such as the availability of financial resources. It is therefore possible that an intervening variable (e.g. financial stress – an element of the vulnerability context) is confounding a straightforward analysis between social capital and health outcomes.

Vertical social capital appears to be an important economic resource among *cartoneros*. An ANOVA analysis indicates that those who agreed or strongly agreed that they could depend on social support from a *patrón*¹² earned more money on average the last time they sold materials than did those who disagreed or disagreed strongly (\$113.76 vs. \$82.62 pesos; $p = 0.03$)¹³.

Respondents who reported that they collected recyclable or reusable materials from “clients” – usually business owners and building doormen who separated and saved these materials for them – earned slightly more money on average each day than those without clients (\$29.26 vs. \$24.68 pesos; $p = 0.02$)¹⁴. This type of *cartonero*/client relationship can also be understood as an example of vertical social capital, especially since 94% of survey respondents indicated that they did not pay or provide any in-kind goods in return for these saved materials. A higher proportion of respondents who reported having clients trusted business people ($p = 0.01$)¹⁵ and doormen ($p = 0.00$)¹⁶ and they experienced fewer conflicts with doormen ($p = 0.00$).¹⁷ However, those with clients experienced more conflicts with other *cartoneros* ($p = 0.00$)¹⁸ suggesting that this type of vertical social capital may be an asset that causes competition or discord among horizontal social networks.

Kessler and Di Virgilio (2008) note the importance of social capital to the “new poor” of Argentina post-crisis, but also note that such economic instability reveals the fragility of social resources. They comment that the conversion of social capital to other types of resources is not automatic, and that the rapidity of the effects of the Argentine crisis did not allow many to develop adaptive coping strategies based in social networks. The vertical social capital networks with clients, doormen and *patrones* that *cartoneros* have managed to build over time do seem to offer limited socioeconomic benefits. For example, one respondent told of a doorman who found her a short-term job in the building where he worked doing cleaning and elder care work. She had earned \$30 pesos a day for this domestic work (approximately \$10 USD); her reported income from informal recycling work at the time of the survey was an average of \$29 pesos per day. However, for most *cartoneros*, these opportunities are usually non-transformational and do not help them to leave informal recycling work.

Furthermore, *cartoneros*' relationships with clients and doormen often take on a tone of patronage that serves to reinforce the trenchant differences in social status that exist between the benefactor and the receiver of charitable assistance:

They have always helped me, they've given me *café con leche* for the kids, soup. No, no, no. I have nothing to say about the neighbours [of the work zone] because they have helped me a lot. It's like they protect me here. (51 year old woman)

...some doormen protected me, various doormen... because I was working, and the police came, they wanted to take me away, and so the doormen went and said, "he takes [from the trash] here, the kid is from here," you see... I behave well, they behave well. When we're both good, we get along well. (18 year old man)

Beall (1997) takes issue with the benefits that are purported to arise from traditional forms of social capital. She demonstrates that those with power are those who benefit most from horizontal and vertical forms of social capital; therefore, "a focus on power renders Putnam's... distinction between vertical and horizontal networks inadequate and his celebration of horizontal networks as hopelessly over romanticized" (p. 957). She notes that with respect to waste management in India, social capital can reinforce broader structural inequalities that are prevalent in a particular society. Although waste pickers may have social relationships with people in positions of power (vertical social capital), these relationships are not a sufficient resource to overcome the momentum of class difference and the "collective power" (p.960) inherent in social structures (see also Adhikari & Goldey, 2010; Das, 2004; Cleaver, 2005; Thieme & Siegmann, 2010). In the case of *cartoneros*, the emergence of dependent and patronage relationships with

residents and doormen indicate that vertical social capital can reinforce existing social hierarchies of power.

While the characterization of social capital as potentially exploitative does hold true to some extent in Buenos Aires, some *cartoneros* have managed to build solidaristic relationships with their clients and other residents of their work zones that have proved empowering for them:

It's like with the *Tren Blanco* [a high profile dedicated train line for *cartoneros* travelling to the city that was later removed], we had to fight a lot... ask for signatures from the neighbours, the guards, everyone, in order to have this... this means of work...and that's how we got the train... We are independent *cartoneros*, but we are organized. (49 year old woman)

The above example highlights the importance of vertical social capital to some forms of collective action. The support of neighbourhood residents and train guards in the petition presented to municipal authorities gave legitimacy to *cartoneros'* cause, and supported the institution of dedicated train lines for *cartoneros*. Therefore, the type of vertical social capital that enables collective action and creates widespread solidaristic support can be mobilized to improve *cartoneros'* working environments. Gorbán (2006) argues that the solidarity and willingness to take collective action among the *Tren Blanco cartoneros* pre-dates their work as informal recyclers, and was originally a characteristic of their horizontal neighbourhood relationships.

4.5 Social capital as a precarious asset

Social capital can therefore support collective action and provide social protection, but as noted above, it can also complicate health outcomes and strengthen hierarchical relationships that

may prevent transformative change. In addition to the potential for social capital to enforce constraining relationships, this asset is often not equally available across communities (Daniere, Takahashi, & NaRanong, 2002; Thieme & Siegmann, 2010), and the social costs of accessing this asset are not the same for all groups (Silvey & Elmhirst, 2003). For example, with respect to differing levels of social participation in Argentina, Lederman (2005) has noted that “For the poorest quarter [of the population]... the marginal costs exceed the marginal benefits of participation” (p.17). Drawing upon social capital may involve more time, effort, or exposure to vulnerabilities for some community members than others.

Among *cartoneros*, gender is an important dimension of social difference that structures access to social capital. For example, survey results indicate that men are more likely to reach out to help fellow *cartoneros* ($p = 0.00$)¹⁹ or a resident living in their work zone ($p = 0.03$)²⁰ than women were, and women were more likely to rely on more institutionalized and mediated forms of social support than men were (i.e. church support; $p = 0.01$)²¹, assistance from state and community groups ($p = 0.00$)²², and the establishment of regularized client relationships ($p = 0.00$)²³). These results suggest that masculine comfort in the public sphere may enable social relationships in the work zone for men, whereas women are more likely recipients of formalized social assistance, and may be viewed as more legitimate claimants of this type of support. These kinds of gendered channels for social capital can limit the coping strategies available to both women and men facing similar vulnerabilities (Masika & Joekes, 1996).

5) Labour

5.1 Work, earnings, and identity

Informal recycling as a labour strategy relies on an individual's capacity for physical work (i.e. health, ability, and strength), as well as the availability of materials in the trash stream. Increasing competition for materials was described by many respondents as a threat to their livelihoods. *Cartoneros'* work also inherently involves exposures to health threats. However, their labour may also offer protective health benefits because it provides people with income, exercise, and possibly a safer working environment than previous hazardous work sites (as noted by one respondent who used to work at a tannery surrounded by industrial chemicals).

Cartoneros primarily used their labour to address economic vulnerabilities:

And I started when my husband was without work and... well... I had little kids.

There were days when I didn't have anything to give them to eat, and so that's how

I started [working as a *cartonera*]. (41 year old woman)

Moser (1998) similarly observed the entry of women into the workforce to mediate household economic vulnerability, a trend that Cerrutti (2000) confirms has been common in the Argentine context as an aspect of poverty mediation during times of economic crisis. The Argentine economic crisis of 2001-2 is an example of an acute economic shock that led to economic vulnerability for many low-income urbanites. Labour was a key aspect of coping with this vulnerability, and for some who lost jobs during the crisis, informal recycling work became an increasingly important asset:

...And well, then the work ended and I started to wander around, and then that happened... – the crash. The crash that happened in December 2001 came to be and I started to come to work as a *cartonero*. (25 year old man)

Because informal recycling work is not a particularly stable or well-remunerated form of labour, some *cartoneros* take on additional work (and thereby diversify their labour) in order to provide for their households. In the survey, 14% of respondents reported that they earned money from other types of work, including part-time construction work, domestic work, and odd jobs in general. The average amount of money that *cartoneros* earned from other sources of income was \$268.22 pesos (~\$89 USD) per month, with a median of \$190 pesos (~\$63 USD).

Another problematic aspect of *cartoneros*' labour is the stigma that is associated with working in the trash, as described above. Their labour is a complicated asset because it is both the source of this stigma, and the basis for attempts to mediate the vulnerability of social exclusion. As detailed by Perelman (2007), there is a long-standing glorification of the worker identity in Argentina, notably since the Peronist era of industrialization. *Cartoneros* often appeal to a worker identity in order to mediate the stigma that others project onto them:

With time one gets used to it, or, it's part of your daily life already. They ask me and I say, "I work as a *cartonera*." It's my work. I see it like that... I'm past the time of shame, of feeling bad about myself. Now I look at others like they are my equal. (44 year old woman)

I looked for the best way, doing things right so that my children will tomorrow feel proud of their father who didn't go out to rob, but to earn money with dignity. (46 year old man)

Cartoneros often contrasted the use of their labour with committing crime or begging for money. The worker identity is portrayed as a redeeming aspect of their labour that overrides the stigma arising from the association of informal recycling with waste, filth, and poverty. Informal recyclers elsewhere have also presented their labour as a rebuttal to discrimination and social exclusion (see Gowan, 1997). In the case of *cartoneros*, labour is therefore a precarious asset because it is both the source of, and the attempted remediation of, both social stigmatization and health problems.

5.2 Social entitlements

Lloyd-Sherlock (2006) advocates for the inclusion of social entitlements (such as pensions and other types of public income support) into the asset portfolio described by Moser. This addition makes sense in the Argentine context, particularly in light of the introduction of the *Programa Jefas y Jefes de Hogares Desempleados* (Unemployed Heads of Household Program) subsidy in 2002 in order to supplement the household income of families who lost work due to the crisis (Galasso & Ravallion, 2004). This subsidy accounted for 37% of the household income of the poorest quintile of the population in October 2002 (McKenzie, 2004), and so has been an important asset in post-crisis Argentina.

In the survey, 29% of respondents reported that someone in their household received a government subsidy. The most commonly reported subsidy was *Plan Jefes y Jefas de Hogares*, although others (such as government pensions) were also listed. The pilot version of the survey asked respondents how much money they received from government subsidies on a monthly basis. The median value was \$150 pesos (approximately \$50 USD; n = 6), or about 25% of *cartoneros'*

average monthly income. Subsidies were therefore an important income supplement for almost a third of survey respondents. However, the majority of *cartoneros* did not enjoy access to such benefits, and the reasons for their exclusion from eligibility for social entitlements can be inscrutable:

I don't know how it was. My wife went to the Municipality of Lomas de Zamora, and she said why don't they give her the Plans if she put herself down for it, and they looked in the computer: "Ma'am, here it says that you don't need it," they said. "What do you mean I don't need it?"... What can you do. And then, to fight for it, no. We were born to work, it seems to me, because they don't give us anything. (50 year old man)

Therefore, social entitlements may remain inaccessible to some who do not have sufficient access to other assets (such as social, human, or cultural capital) that may be necessary to leverage such benefits. Auyero (2010) describes the time-consuming and indeterminate process of applying for subsidies in post-crisis Buenos Aires as the "invisible elbow" that nudgingly encourages the "silent submission of the poor to the mandates of the state" (p.15), revealing the precarious nature of social entitlements as a livelihood asset.

6) Human Capital

The development of human capital among *cartoneros* is somewhat limited despite universal access to all levels of education as well as basic medical care in Argentina: these workers have relatively low levels of educational attainment, and also experience a number of threats to their health. Respondents were asked about the highest level of schooling they had attained, and

these data were compared to INDEC (2005) statistics for the highest level of schooling attained for the population aged 15 years and older. In general, *cartoneros* had a much lower level of educational attainment than other Argentine urbanites. For example, 37% of *cartoneros* had achieved less than a complete primary education, compared to only 10% of the broader urban population in Argentina. In contrast, 1% of *cartoneros* had attended some level of tertiary or university schooling, compared to 26% of the Argentine urban population. Interviewees linked their lack of educational attainment to the constraints of work and economic strain:

Interviewee: I was fifteen years old, I needed money, I had to leave school, I had to leave soccer, everything. I had to leave everything to start work and help my parents.

Interviewer: And why did you need money?

Interviewee: To maintain my household, because my parents couldn't get [money].
(17 year old man)

I was doing a course in Social Communications, and I entered the Faculty of Social Sciences of Lomas. I did my degree course and then I was to have a scholarship but I had to leave it, because to come here I had to take two buses to go and two to come back, and it was impossible for me to maintain the cost of the trip, the materials, and to feed my kids, obviously. (44 year old woman)

Despite such logistical difficulties as those raised in the above quotes, one interviewee explained that he was able to attend morning classes at his high school, sleep in the afternoon, and then come to the city to work at night. This anecdote demonstrates the level of difficulty involved

in maintaining both work and schooling activities. Jones and Chant (2009) describe how youth in Gambia and Ghana often must consider trade-offs between education (a human capital asset with potential long-term benefits) and labour (an asset with more immediate economic benefit) in the context of household economic need. Similarly, Kazianga (2012) reports that income uncertainty resulted in lower school enrollment of children in Burkina Faso: in times of economic vulnerability, children's human capital was traded off for employment opportunities.

Other forms of human capital, such as health status, can also be traded off to enhance other assets. With respect to *cartoneros*, the health trade-offs inherent to their work involve regular exposure to health hazards in the trash in order to find resalable materials and earn an income. For some, the costs associated with health care may prove prohibitive. Despite universal access to the public health care system, many associated costs remain, such as pharmaceuticals, the cost of transportation to a medical facility, and the opportunity costs associated with missing work. One respondent was explicit in his description of the reasons why he was willing to forgo health care:

Interviewer: You don't go to the doctor? Even if you don't feel well?

Interviewee: Yes, even if I don't feel well. If I then go to the doctor and they tell me "you have to buy medicine," no. That's worse. I have to work more to buy medicine. And so, no, better to not go to the doctor. (23 year old man)

This quote indicates how the precariousness of *cartoneros'* other assets (e.g. the instability of their work and earnings) compromises their ability to fully take advantage of widely-available resources and opportunities in Argentina that allow for human capital development, such as the health and educational systems.

7) Household Relations

Household relations are a means of pooling resources and collectivizing consumption. *Cartoneros* use the household unit to create economies of scale, as well as to support other types of shared activities. One example of household collaboration is the sharing of domestic duties in order to support work activities:

For example, there's my fourteen year-old daughter. Of the oldest girls, it's her who takes care of her siblings, along with my husband. So when I come [to work], the times when I can't come he comes, and so we take turns, because one of the adults has to stay with the children. (35 year old woman)

The diverse incomes of other household members (and particularly those not typically considered primary bread-winners) are an important collective resource that can contribute to the resilience of low-income households in situations of protracted poverty (de la Rocha, 2007). The pilot version of the *cartonero* survey asked respondents to detail the incomes of the other members of their households. While 12/19 pilot survey respondents indicated that at least one other person in their household earned an income, none were able to reliably report the amount of money earned by these individuals. Household-level economic coping strategies therefore remain an under-observed aspect of *cartoneros'* household relations in this analysis.

Positive household relationships appear to protect individuals from health vulnerabilities; those who reported that their household relationships were either good or very good more frequently reported their health as good or very good ($p = 0.00$).²⁴ It is possible that positive household relationships allow the individual to engage in health-protective activities through the

sharing of financial and social responsibilities. For example, one household member may be more able to take time off to recuperate from an ailment if other household members are willing to cover their income-earning and domestic responsibilities. It is also likely that the survey measure assessing household relationships captured cognitive aspects of social capital (i.e. ability to trust and depend on others), and that the above relationship may be a vestige of the health protective effects of social capital.

The cooperation of a family unit can also serve to provide some household members with opportunities to develop their own assets:

And well, that – for me, I wouldn't want my siblings to come work [as *cartoneros*] because they are very young and, I don't know, I want them to have other help, so that they can continue studying. That's all. (21 year old woman)

In some cases, the shared needs of a household can lead to forms of collaboration that compromise an individual's asset base. For example, during the survey, we observed that 19% of respondents were working with children present. In some cases, these children were accompanying adults in order to facilitate child care, but we also observed children participating in informal recycling work. The ILO has identified child labour as a common issue among informal recyclers in many countries (ILO, 2004), and particularly in Argentina following the 2001-2 crisis (ILO & UNICEF, 2005). Some respondents relayed their own accounts of the genesis of their work as child *cartoneros*:

I started with my mom – I always came with my Mom, later I came alone... I was eight years old, more or less... I didn't come first, my older sister came first. Later

I started to come with her. I came to help her, to ask for goods from houses, all that, for us. (16 year old man)

In the above case, the reliance on family members' contributions as a shared household asset led to the respondents' involvement in both informal recycling and begging as an eight year-old child. Relying on child labour as a household asset can degrade the child's human capital (health status and educational attainment). This tension supports de la Rocha's (2007) observation that "the household is a highly contradictory social unit characterized by the co-existence of solidarity and conflicts (between individual and collective interests, differing gender and age interests)" (p.54; see also Vijaya, Lahoti, & Swaminathan 2014 on this point). Household relations can therefore provide resources and opportunities, as well as vulnerabilities for individual household members. These opportunities and vulnerabilities can also be influenced by gendered and generational power dynamics manifest in household relations.

8) Productive Assets (Housing and Access to Traditional Credit)

Cartoneros have limited access to productive assets, and to formal economic institutions more generally. For example, only 2% of surveyed *cartoneros* had a bank account (which is a reflection of both the marginality of *cartoneros* as well as people's widespread mistrust of Argentine banks post-crisis). Housing thus becomes an important site for *cartoneros*' economic coping strategies. Informal recycling work often extends into residential environments: for example, 56% of survey respondents reported that they sorted their materials at home. A common economic buffer for *cartoneros* is saving materials to sell at a later date (particularly metals); 71% of survey respondents engaged in this material savings strategy that was often based in the home.

However, there may be health implications to these home-based working and savings strategies due to prolonged exposure to materials taken from the waste stream. Furthermore, housing quality is closely related to income, and so this is not an asset that is readily available to all. Poor housing quality can also present health risks to *cartoneros* and other low-income people. Among survey respondents, 19% lived in homes with floors made from dirt, which is usually an indicator of poor housing quality. These respondents were more likely to report their health as either very bad/bad or neither good nor bad when compared to those in homes with higher quality floors ($p = 0.02$)²⁵. In addition, only 69% of respondents reported access to running water in their homes; those without running water may find hygiene practices more challenging, especially when their work involves regular contact with waste. Health concerns were likely even more dire for the 2% of survey respondents who reported that they were homeless at the time of the survey.

9) *Cartoneros*' Livelihood Strategies: Switching Between Precarious Assets

As Sen (2003) notes, escaping poverty requires the pursuit of multiple strategies. Livelihood strategies are the activities and choices that people undertake to meet their livelihood goals. It is understood that assets influence the strategies available to individuals: "Those with more assets tend to have a greater range of options and an ability to switch between multiple strategies to secure their livelihoods" (DFID, 1999, p.6; see also Block & Webb, 2001). However, it is not simply the number or amount of assets that enable sustainable livelihood strategies. The quality and stability of assets also influence one's ability to "switch" between assets and the resulting livelihood outcomes of such changes.

Some of the livelihood strategies employed by *cartoneros* have already been described above, including labour diversification, making trade-offs between education and immediate

income, and bridging productive and reproductive work by bringing children to the streets. Survey respondents were also directly asked how they would cope with short-term financial need in order to assess which assets could be most readily leveraged. Table 1 below depicts the wide range of responses given to the following open-ended survey question: “What would you do if you needed a bit of extra money? (Prompt: between \$100-\$167 USD).” The total of the table values exceed 100% because multiple responses were allowed. The answers are organized into the types of assets that respondents indicated they would draw upon in this hypothetical situation.

TABLE 1 HERE

This breadth of responses suggests that there are numerous potential interactions between *cartoneros*' assets and vulnerabilities. These results suggest that labour, social capital, and the limited access they have to productive assets (i.e. saved materials) are key assets that *cartoneros* rely upon in times of acute financial stress. These are precarious assets that may entail vulnerability, however: loans from people who have power over the resources that *cartoneros* rely upon for their work (such as depot and truck owners, *patrónes*, or doormen) can lead to potentially exploitative relationships. Reliance upon working more in times of financial difficulty assumes that a *cartonero* stays healthy enough to work more hours and is capable of finding more materials to sell. Selling saved materials implies an ability to find storable high-value materials (such as metals), and to store them securely (usually in the home) until they are needed. While the breadth of coping strategies offered by respondents demonstrates active coping and resourcefulness, the insecurity of the most common options listed above undermines the sustainability of this livelihood.

10) Discussion

This analysis has revealed that many of the assets *cartoneros* regularly mobilize are precarious, and may actually contribute to their vulnerability context: these workers may be engaged in exploitative vertical social capital relationships, their labour relies on low-paid waste work that exposes them to hazardous materials and conditions, they have insecure access to social entitlements, their human capital development often requires trade-offs with other assets (and notably their labour), child labour is a common household asset, and they often rely on their homes as a productive resource (i.e. as a base for potentially contaminating waste work and as a site for material savings). The risks inherent in drawing upon these precarious assets can create vulnerabilities for *cartoneros*, thus undermining the sustainability of their livelihoods.

Coping involves balancing multiple assets and vulnerabilities at the same. *Cartoneros* often make trade-offs between assets as a livelihood strategy, and finding balance between a set of poor choices can be difficult. Some respondents discussed making trade-offs either to balance between acute and long-term vulnerabilities, or to address the needs of another person in their family. These balancing acts tend to impact some individuals more than others. Similar to Moser's (1998) findings, women and young *cartoneros* most commonly bore the burdens associated with household and economic changes, either by entering the workforce or by taking on both domestic and paid working responsibilities. The unequal distribution of risks and responsibilities was also evident in the deployment of other types of asset (such as the traditionally female role of seeking social entitlements for the family or attending to household health care and child care needs).

This analysis reveals the importance of understanding the macro-context of social and economic factors that can contribute to *cartoneros*' vulnerability, such as macro-economic

volatility (as exemplified by the 2001-2 crisis), institutional inequalities (such as uneven access to social services and benefits), and social marginalization. The distinctive experiences of female and young *cartoneros* also suggest that the dynamics that perpetuate social difference (such as patriarchy, inter-generational power dynamics, and other forms of discrimination) also contribute to the macro-context of some individual's vulnerabilities, and differentially impact the accessibility of certain assets (such as social services or household resources).

Structural means for improving *cartoneros'* access to assets could include the improvement of the processes by which social entitlements are procured, as well as the benefits that are provided by government (including educational access and health and income benefits), macro-economic interventions that curtail the volatility and crisis-cycles that have been experienced in Argentina over the past decades, and labour market interventions that reverse the trends of flexibilization and informalization observed in the 2000s. Policy initiatives that seek to improve the living and working conditions of informal recyclers could also be pursued; *cartoneros'* vulnerability contexts suggest a need for large-scale shifts to create labour opportunities that provide predictable and sufficient income, do not rely on exposure to health hazards, and enable social inclusion and dignity. The local government has been working to semi-formalize cartoneros into municipally-sanctioned co-operatives since 2011. However, it is important for such plans to take into account the protracted vulnerabilities faced by some workers who must balance child or elder care with work, who desire to attend school while working, or who face exclusion from traditional labour markets due to addiction or mental illness. While the formalization plans may lead to increased income and social legitimacy for some workers, I argue elsewhere that these plans will likely serve to further marginalize those workers already balancing multiple vulnerabilities (Parizeau, 2013).

10.1 Implications for the livelihoods approach to poverty alleviation

This analysis has revealed both strengths and limitations of the asset vulnerability approach to livelihoods research and practice. The categorization of assets and vulnerabilities provides a holistic overview of many factors that can influence the lives of the urban poor, and challenges the notion the poverty is simply a lack of financial resources. However, the conceptual separation of assets from vulnerabilities creates a false dichotomy that overlooks a key factor in the sustainability of urban livelihoods: that the quality of an asset is an important determinant of its ability to contribute to long-term resilience and poverty alleviation. If leveraging an asset creates new vulnerabilities or requires trade-offs that compromise other assets, the stability of the individual (and likely the household) are put in jeopardy.

Jones (2002) asks: “Does a livelihoods approach provide guidance in selecting the most effective interventions, or is it only a broad tool for holistic analysis...?” (p. 273). I would argue that livelihoods approaches provide valuable assessment tools that can be modified to acknowledge the complex interactions between assets and vulnerabilities. For example, this case study has not only documented the assets *cartoneros* draw on, but has also assessed the sustainability of these assets by considering the potential vulnerabilities involved in their use, the need for trade-offs caused by leveraging these assets, and the ways that broader social and economic dimensions of vulnerability can impact the availability of a given asset. This approach destabilizes the conceptual separation of assets and vulnerabilities, revealing that precarious assets may actually contribute to the vulnerability context. Livelihoods assessments that acknowledge this interplay would be better positioned to assess the sustainability of the portfolios of assets that low-income people manage in addressing their vulnerability contexts.

I caution that the conceptual separation of assets and vulnerabilities may lead to the design of interventions that do not adequately address the dynamics of the lives of the urban poor (for example, attempts to address assets as discrete resources that can be improved or accumulated, regardless of the vulnerability context). To paraphrase Silvey and Elmhirst's (2003) commentary on gendered experiences of social capital, it is important to observe the diversity of assets, to explore individual's subjective experiences of them, and to understand the relationships of social power to such assets. I suggest that the principle of a people-centred approach to livelihoods (Rakodi & Lloyd-Jones, 2002) invokes the need to consult with the urban poor themselves to determine appropriate interventions for addressing poverty. As this analysis shows, *cartoneros* have a strong understanding of the trade-offs and vulnerabilities inherent in the assets they rely upon, and they also understand the complexity of their own social worlds, including the constraints that macro-contexts of vulnerability place on their livelihoods. Involvement of the urban poor in designing and carrying out poverty-reduction programs has the potential to best address the interconnected nature of assets and vulnerabilities in their lives.

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¹ The 2001 census data was the best available comparator for health system access.

² Chi-squared analysis: $\chi^2(1) = 5.192$

³ Chi-squared analysis: $\chi^2(1) = 5.427$

⁴ Correlation: $r_s = -0.130$

⁵ Chi-squared analysis: $\chi^2(2) = 6.046$

⁶ Chi-squared analysis: $\chi^2(2) = 8.599$

⁷ Chi-squared analysis: $\chi^2(2) = 7.375$

⁸ Chi-squared analysis: $\chi^2(3) = 12.378$

⁹ Chi-squared analysis: $\chi^2(3) = 11.777$

¹⁰ Chi-squared analysis: $\chi^2(1) = 9.500$

¹¹ Chi-squared analysis: $\chi^2(1) = 7.686$

¹² A *patrón* is an authority figure; this term was prompted in the study with reference to a boss or a recycling depot owner. Because of the informal nature of *cartoneros*' work, these relationships are more a function of social networks than formal labour contracts.

¹³ ANOVA analysis: Welch F (2, 86) = 3.731

¹⁴ t-test analysis: $t(279) = 2.324$

¹⁵ Chi-squared analysis: $\chi^2(1) = 6.125$

¹⁶ Chi-squared analysis: $\chi^2(1) = 39.565$

¹⁷ Chi-squared analysis: $\chi^2(1) = 8.611$

¹⁸ Chi-squared analysis: $\chi^2(1) = 11.792$

¹⁹ Chi-squared analysis: $\chi^2(1) = 18.346$

²⁰ Chi-squared analysis: $\chi^2(1) = 4.968$

²¹ Chi-squared analysis: $\chi^2(1) = 7.218$

²² Chi-squared analysis: $\chi^2(1) = 13.448$

²³ Chi-squared analysis: $\chi^2(1) = 16.463$

²⁴ Chi-squared analysis: $\chi^2(1) = 10.678$

²⁵ Chi-squared analysis: $\chi^2(2) = 7.432$

Table 1: Survey responses to the question, “What would you do if you needed a bit of extra money?” (n = 388)

Asset type	Response	Percentage of respondents
Social capital / household relations	Ask depot/truck owner for a loan	17%
	Ask family member for a loan	16%
	Ask for a loan, general	7%
	Ask friend for a loan	3%
	Ask neighbour for a loan	2%
	Ask boss/ <i>patrón</i> for a loan	0.3%
	Ask co-worker for a loan	0.3%
	Ask doormen for a loan	0.3%
Labour	Work more (informal recycling)	24%
	Take on other work	6%
Human capital	Reduce expenditures / go without	1.3%
Productive assets	Sell saved materials	21.4%
	Rely on savings	0.3%
Other / none	Nothing, put up with it	7.2%
	Doesn't know	1.8%
	Doesn't need money	1.0%