

Peshawar's Historic Walled City: Firms, Mobility and Public Services



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About the project

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Impact

The economic activity survey was designed and conducted in direct collaboration with the Urban Unit in Khyber Pakhtunkhwa. The categorization of geo-spatial clusters of economic activity will be very useful for policymakers and it can be used for further surveys.

This report was prepared by James C. Witte (George Mason University), Ammar A. Malik (Harvard Kennedy School of Government), Zahoor ul Haq (Abdul Wali Khan University), and Javed Iqbal.

In brief

- Ancient cities, which were often old walled cities, exhibit peculiar spatial, social and economic forms. Their urban forms are highly path dependent featuring narrow congested streets, and make retrofitting modern infrastructure extremely challenging. This creates unique challenges for government agencies involved in urban service delivery.
- This study examines data to document historical spatial and economic patterns of economic activity to find out where and what clustering of businesses exist.
- To document this economic activity, the researchers conducted a survey with 400 businesses located throughout the inner city of Peshawar, Pakistan.
- The findings show that the state of public service delivery is generally poor, with power supply and building quality being a primary concern. Most priority problems identified by respondents require empowered, high capacity and well-resourced local governments focused on delivering responsive and accountable governance at the grassroots level.

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Final report



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James C. Witte, Ammar A. Malik, Zahoor ul Haq and Javed Iqbal

Final Report

1 Introduction

Historic inner city neighborhoods in ancient cities, which were often old walled cities, exhibit peculiar spatial, social and economic forms. Their urban forms are highly path dependent, featuring narrow congested streets, making retrofitting modern infrastructure extremely challenging. They have extremely high population and economic density levels, often accompanied by mixed land-use patterns and clustering of commercial activity. This creates unique benefits, challenges and opportunities for government agencies responsible for providing public services.

This parallels the broader conundrum created by urbanization, whereby the potential benefits from agglomeration are offset by the costs of congestion. In inner cities, economic specialization based on historic spatial patterns could arguably improve productivity, but not unless basic urban functions are delivered adequately. The physical mobility of workers is key to ensuring worker-firm matching, though reliable and consistent provision of other services like power and piped water are equally critical. Due to the lack of neighborhood or household level economic data, policymakers in many cities plan and execute the provision of public services without taking local economic realities into full consideration. Public transit planning in such environments, for instance, is not based on areas of economic activity, or on the structure of local labor markets, but rather on engineering or political considerations.

In this context, as Peshawar constructs its first mass transit service, we worked in close coordination with provincial government authorities, specifically the KP Urban Policy Unit (UPU), to undertake this project. We aimed to achieve three objectives. First, pilot testing fieldwork methods for undertaking a rigorous firm survey in inner city Peshawar: how feasible are firm surveys in hard to reach places? Second, use our pilot data to document historical spatial and economic patterns of economic activity: where and what clustering of businesses exists? Third, based on this data suggest policy implications and ways of improving the status quo: what measures should authorities introduce to ameliorate spatial and economic inefficiencies?

After surveying around 400 businesses throughout the inner city, we discover an economy dominated by small and medium enterprises with an immobile workforce dominated by family members, clienteles dominated by customers who walk to retail businesses and some evidence of spatial clusters by sector of economic activity. The state of public service delivery is generally poor, with reliable power supply and quality of buildings being the most striking areas of concern for most businesses. Most of their workforce consists of low-income individuals, with approximately 75 percent of full-time workers earning 14,500 PKR (\$105) or less per month, and not even a single business owned by women. Most priority problems identified by respondents require empowered, high-capacity and

well-resourced local governments focused on delivering responsive and accountable governance at the grassroots level.

Following this introduction, we discuss the research methodology including the fieldwork plan, as well as reflecting on execution challenges and approaches for overcoming them. We then introduce the resulting dataset, describing its key features and highlighting limitations. We organize findings in four subsections: 1) worker and customer mobility, 2) public services, 3) education and workforce quality, and 4) establishment characteristics. We end the report with a series of policy recommendations for local and provincial authorities, and ideas for future research to undertake deeper analysis in promising areas of inquiry.

2 Research Methodology

Given that there is a dearth of knowledge about firm level data relating to various aspects of establishments in Pakistan in general and Khyber Pakhtunkhwa in particular, this pilot project seeks to understand and implement procedures and processes that could lay a background for future fieldwork.

We intended this project to be a learning exercise, mainly for setting up the foundation groundwork for future fieldwork, enabling us to experiment with various elements of fieldwork. Through various stages of this establishment survey – particularly questionnaire design, sampling strategy and field execution including selection of respondents – we discovered and attempted to overcome hurdles. Given the unpredictable law and order situation, recent history of terrorism, businesses' fear of tax authorities' attempts at increasing the tax base, and the conservative local culture, we anticipated low response rates. An important element of our approach was to work through local intermediaries, e.g. members of informal business groups or community elders, to allay fears of potential respondents.

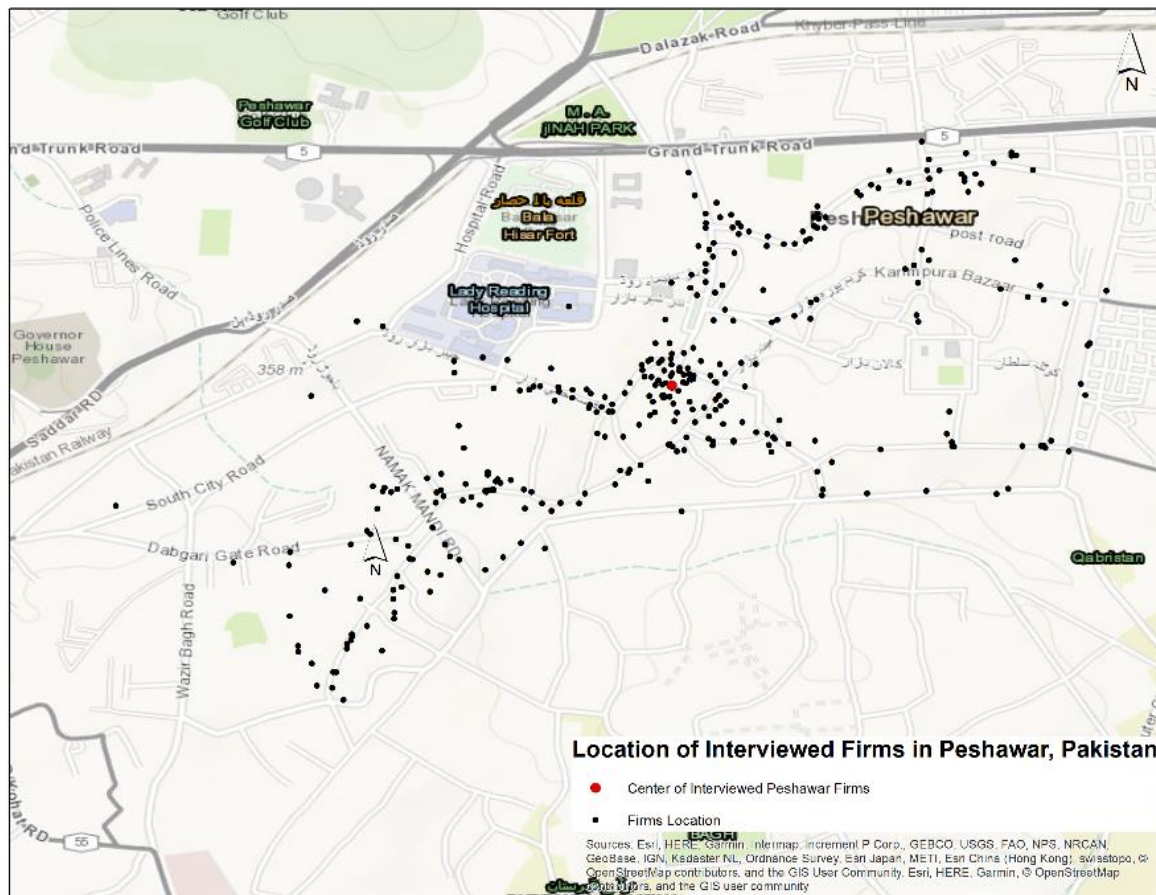
2.1 Survey basics

Despite these difficulties, between March and May 2018, our 12-member field team completed 404 surveys spread across 21 partial or full days, all weekdays. The all-male team composition was appropriate for local culture and consisted of staff, faculty and students from Abdul Wali Khan University's department of economics – most either called Peshawar their hometown, or were familiar with the city. Each under the guidance of a supervisor, three groups of three to four enumerators typically worked in morning and afternoon shifts to complete the required target number of interviews. Given resource and time constraints, we set the sample size target of 400 to ensure adequate geographical coverage throughout the historic walled district, depicted in Figure 1 below. Since this project was the first attempt to study individual level businesses in the walled city, the total number of businesses, their types, or any other parameters were unknown; thus we were unable to design a more nuanced sampling strategy, (e.g., stratifying by firm size) for this pilot project.

In the absence of a robust sampling frame, i.e. not even the latest population census microdata, we designed a geographic approach based on prominent local landmarks such as historical markets (e.g. Qisa Khwani Bazar) and key buildings (e.g. Cunningham Clock Tower). We selected a total of 20 starting points across all segments of the walled city, targeting around 25 interviews around each point using the random walk method within a 1.5 kilometers radius, or an average walking time of around 15 minutes. After arriving at the given starting point, field teams were required to: update geolocation to confirm location accuracy, take photographs of nearby landmarks (if appropriate), spin a pen to determine walking direction, and attempt to interview every 5th business on the right-hand side. If in this process

they came back to the starting point, they were instructed to spin the pen again and follow the same process, continuing to do this repeatedly until reaching the target number of interviews.

Figure 1: Location of Interviewed Businesses



Before full implementation, we undertook pre-piloting through a three-day exercise in which we tested and fine-tuned key planned elements of fieldwork, carefully documenting impediments and introducing rectifying measures. For example, within the first day of field activities, we discovered that the accuracy and timeliness of GPS coordinates on 4G connected Android smartphones was unreliable, likely due to high building density causing disruption in cell phone coverage. Thereafter, for each starting point, we included the nearest possible small landmark (e.g. shop name, cross-street etc.) allowing enumerators and supervisors to make sure they have arrived at the correct point. Prior to each day's fieldwork, supervisors undertook daily work planning with enumerators using digital maps of the area with satellite imagery background. In these sessions, teams would go through possible routes to arrive at the starting point, familiarize themselves with area landmarks and establish daily targets of number of surveys.

Given local sensitivities, at each contact, we instructed enumerators to begin by establishing a rapport with business owners: politely introduce themselves and the study's objectives, offer to share evidence of their affiliation with a local university and assure that any information disclosed would not be shared with tax or other authorities. While time consuming, this process was critical in achieving the targeted number of survey responses, particularly in harder to reach neighborhoods within the old

walled city. Despite this and frequent reliance on local intermediaries for introductions, on several occasions local businessmen or residents blocked access to their neighborhoods. On such occasions, teams were instructed to suspend fieldwork until after interventions from the field team leadership with local community members. Since most of the interviews took place during the busy business hours, it was also very time consuming for the respondents to answer survey questions, as well as serving the customers. They took interest in the beginning, but as the interview progressed, it seemed that they were losing interest in it, leading to higher item non-response for questions later in the survey. Similarly, data on sales and assets was very hard to collect because of the concern that such information could be used against them. Most of the businesses were undocumented, not registered with the federal board of revenue (FBR) for national taxation number (NTN) to collect and pay sales taxes. They are also not registered with the Securities and Exchange Commission of Pakistan (SECP).

After the completion of fieldwork, the team spent 10 working days carefully entering data from paper forms into MS excel using a template created from the questionnaire. Up to 10 percent of all survey data was spot checked by the co-Principal Investigator thus ensuring the integrity of the resulting digital dataset. During data entry and checks, some paper forms had to be discarded due to errors such as illegible handwriting or multiple incomplete entries. We then cleaned up the resulting dataset and analyzed it in SPSS for inaccuracies, outliers and inconsistencies.

2.2 Lessons learned during fieldwork

The pilot fieldwork produced a number of lessons that we could apply in future fieldwork in Peshawar's walled city, as well as other hard to reach urban locations around the world. While some of the following would apply to household surveys just as well, these are mainly relevant to surveys of smaller businesses, which form the majority of business activity in urban Pakistan.

First, the role of local intermediaries such as respected business or community leaders, is critical for achieving desired response rates without which fieldwork remains unfeasible. They could not only secure enumerators' easy and safe access to survey sites, but also help convince potential respondents of the public benefit of their participation in the survey. For enumerators and researchers, they could play several roles: helping understand the local business and social environments, review the questionnaire for sensitivities and locally appropriate terminology, appreciate some respondents' potential reluctance to share sensitive information, and later, help ground truth or interpret findings from the fieldwork.

Second, the majority of businesses within the walled city are either completely, or mostly, operating in the informal economy. The majority of their business transactions are undocumented, i.e. either on cash or informal reference based accounts payables/receivable systems, and thus are presumably outside the official tax net. This makes them extremely reluctant, or possibly even unable, to provide information on the details of their business transactions, such as revenues or sales. Due to this sensitivity, even local intermediaries are unlikely to influence respondents to disclose more information, hence researchers' best chances of obtaining such information is through informal means. Although entirely anecdotal, most of our field teams suspected respondents underreporting business activities, though it is impossible to independently verify these claims, or objectively assess their extent.

Third, in highly congested urban environments where high buildings and narrow streets block line of sight to cell phone towers and overhead satellites, mobile broadband and GPS coverage could be

patchy and otherwise unreliable. Survey teams relying on smartphones for navigation, instant survey data or photo uploading thus faced difficulties.

Fourth, in bi- or tri-lingual working environments such as Peshawar, where enumerators interacted with respondents mostly in local language Pashto, followed by Urdu, Hindko and in a few cases English, it is important to create multiple versions of the questionnaire. Ideally, translations should be performed by professionals, but with significant review and oversight of the research team to make sure technical terminology is used appropriately.

Fifth, while developing the survey we were unable to create an industry classification system that could capture the diversity of the businesses that might be found in the study area, but would also be simple enough for the interviewers to implement. We decided instead to ask interviewers to note the name of the establishment and take a photo. However, in initial pre-testing establishment owners were upset when interviewers attempted to take a photo, so we decided to rely on the establishment name alone. However, we then found that nearly one-quarter (see Table 1 below) of the establishments could not be classified. Future studies should use an initial classification system, perhaps based on this pilot as a starting point and supplement with another seven to ten categories, particularly including types of businesses likely to be found in the target study area.

Sixth, in areas such as Peshawar's walled city, a stratified sampling approach should be employed to oversample larger firms. Using our random walk sampling method we found very few firms with ten or more employees in our sample. Though this reflects one aspect of the ground truth of an economy with many small, informal businesses, it also leaves few data points to analyze the sales and employment impact of larger firms in the area.

Seventh, attempting to survey individuals in small establishments during the business day was difficult as they were also involved in serving customers leading to more missing data for questions found later in the survey instrument. Future studies should be sure to place the most important items at the outset of the survey, and consider shortening survey duration to the extent possible. In order to increase response rates, survey respondents could be offered compensation for participating in the survey, as a goodwill gesture in return for their valuable time during busy workdays.

3 Discussion

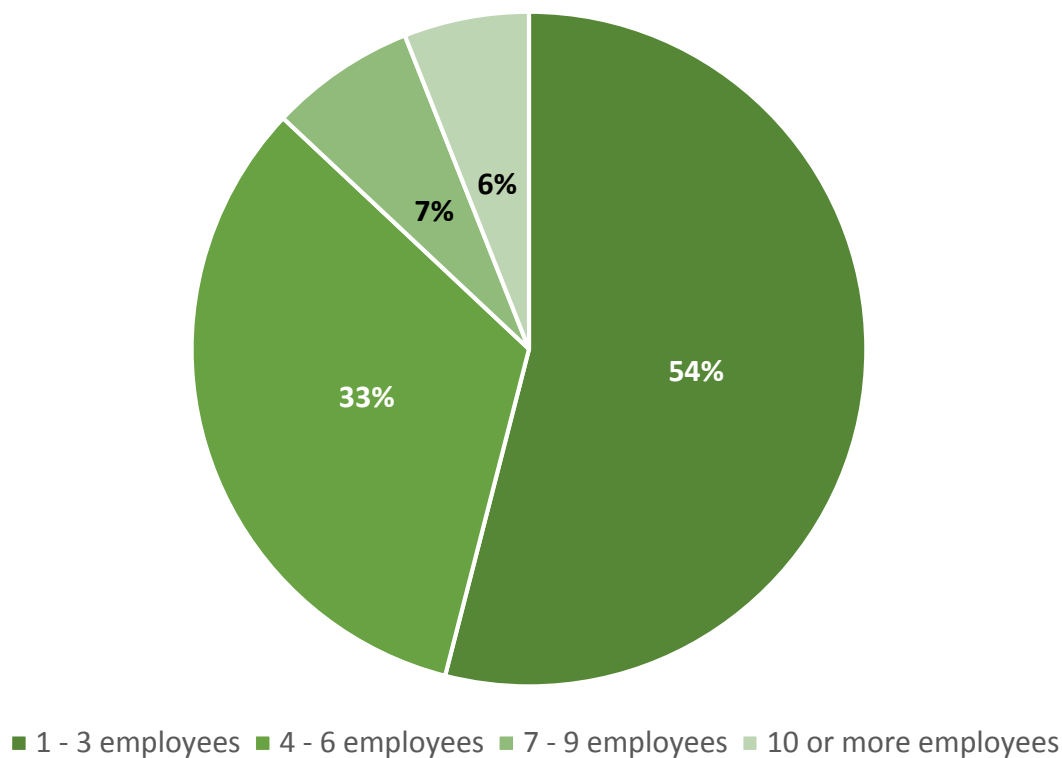
The pilot data set paints a rich picture of the walled city's commercial and business environment. It shows that business activity is mostly in the informal economy, with small family owned businesses dominating the landscape. Workers and customers come from all over the city, with some evidence of national and international trading.

Having said this, however, our data analysis should be considered in the context of the shortcomings detailed above. Most importantly, due to the sampling strategy and difficulties in following the random walk method, survey results are not necessarily representative of all businesses in Peshawar's walled city, or of their various sectors. Our survey is more likely to have included businesses that are: larger in size, located closer to major road arteries and providing goods rather than services. Since questionnaires were administered in multiple local languages without standardized translations, particularly in the case of nuanced questions, respondents may not have consistently understood their meaning.

The completed sample for the study included 404 business establishments from Peshawar's inner city. As anticipated most of these establishments were small, independent businesses. Approximately 96 percent had an individual owner, with another three percent described as a partnership, and the remaining described as a private limited partnerships or franchises.

As seen in Figure 2 below, businesses in the sample were predominantly small businesses with more than half (54 percent) employing no more than three employees, including the business owner; only six percent employed ten or more employees, with the largest reporting thirty employees. Approximately 42% of the establishments surveyed indicated that one or more unpaid family members were involved in establishment operations.

Figure 2: Sample by total number of employees



The overwhelming majority (97 percent) of the sampled businesses have always operated at their current location, but only about one quarter (27 percent) of the establishments own the location where they operate; the remainder rent from others.

As expected, respondents were particularly reluctant to provide financial data, including employee wages and establishment sales, with only 50.4% providing the former and 32.9% the latter. With this caveat in mind, the reported mean gross sales of 2,694,413 PKR (minimum of 50,000 and maximum of 36,000,000) and mean monthly salary of full time workers of 12,675 (minimum of 2,000 and maximum of 25,000) is consistent with the overall profile of an economy based on small establishments with a relatively low-skilled work force.

Not surprisingly, establishments in the inner city are concentrated on meeting the consumer needs of local residents, particularly with regard to a variety of retail sales, including food and beverages.

Table 1: Survey Sample by Establishment Type

Establishment Type	Percentage of Sample
Furnishings, housewares, hardware	10.1%
Electronics, appliances	8.7%
Motor vehicles, sales and service	0.5%
Food, beverages, accommodations	11.1%
Clothing, including shoes, jewelry, cosmetics	16.5%
Medical, pharmacy, optical	4.0%
Other retail, including general retail	24.0%
Other services	0.7%
Unknown	24.3%
Total (N=404)	100.0%

As noted we organize the following findings in four subsections: 1) worker and customer mobility, 2) public services, 3) education and workforce quality, and 4) establishment characteristics. Some of the detailed analyses below report results for mean gross sales or salary, while others are broken out by sector. While these analyses may be suggestive, one should also keep in mind the large amount of missing data, which may bias the interpretation if the data is not missing at random, and limits the statistical power of the analyses even if it is randomly missing.

3.1 Worker and customer mobility

Key spatial features of the walled city, including path dependencies from ancient times, create particular accessibility challenges including narrow, congested streets. Workers lack adequate public transport access, suppliers do not have large vehicle access for deliveries, and customers find it extremely difficult to find any parking facilities. Economic theory posits that greater frequency of economically productive interactions in places with high population and business establishment density, under conditions of widespread transport accessibility and other supporting conditions, could bolster productivity. But in Peshawar's historic walled city, due to the absence of public transport services and factors listed above, we find severe constraints on physical mobility that in turn hampers firms' ability to tap into a broader labor market.

Table 2: Employee mode of commuting by firm size

Mode of transportation	Percent of employees using mode by
------------------------	------------------------------------

	number of employees				
	All firms	1 – 3	4 – 6	7 – 9	10 or more
Walk **	58.9%	70.2%	49.7%	39.4%	27.3%
Drive/ride on a motor bike **	22.3%	20.9%	21.8%	24.2%	44.3%
Bus **	13.9%	6.3%	23.1%	26.9%	17.5%
Taxi or rickshaw	2.9%	1.7%	4.0%	4.5%	5.0%
Ride or drive in a car **	1.6%	0.8%	1.5%	5.1%	5.9%

N = 365 ** p< .01

The modal distribution of workers, as reported by firm owners, confirms that public transport services are limited (under 14%) and a small minority take taxi or its three-wheeled local version, rickshaw. Even though public transport services, including public buses and minivans, are available throughout the greater Peshawar and the Trans Peshawar Bus Rapid Transit (BRT) service is under construction, these incredibly low percentages are likely due to lack of accessibility into the congested walled city. The same reason explains why motorbikes are dominant in private vehicles in congested conditions, i.e. they are extremely easy to navigate in narrow streets and require no parking. Private car use for work is rare or virtually non-existent, in large part due to time spent in traffic jams and the absence of parking spaces.

Assuming that average walking pace is 5 kilometer/hour, the fact that this is the most popular mode of commuting to work implies that most labor originates from within or close-by the walled city. In theory, this implies that firms can only access a limited talent pool of workers, which could stifle growth in productivity – though in reality, most firms in the walled city appear to be low-tech, small business establishments that only require low- or un-skilled workers. Further, walking is negatively associated with firm size to the extent that over 2/3rd of all workers in smallest firms come to work walking. But the exact opposite of this is true for motorbikes, i.e. the larger the firm size the smaller the percentage of workers commuting on them. Overall, this supports the above assertion regarding the small labor force pool, assuming smaller firms in general are low-skilled operations.

Table 3: Establishment mobility by firm size

Has this business always been at this location?**	Number of employees			
	1 – 3	4 – 6	7 – 9	10 or more
Yes	98.4%	97.3%	96.3%	83.3%
No	1.6%	2.7%	3.7%	16.7%

N=349. ** p< .01 – should be interpreted with caution though due to small number of large firms

Unlike leading global metropolitan areas with high productivity workforces and business that have high levels of agility for location of business, Peshawar's market appears to be somewhat static. Even though

it is impossible to ascertain for sure, this too is likely reflective of the ancient, community-centric and mixed land-use lifestyle of the inner-city, i.e. businesses appear content serving the same local, walk-in clientele. Even though 73% of businesses rent their commercial establishment, the vast majority have not moved into new locations over the last several years.

Table 4: Quality of establishment of location

Quality of location is good or excellent with regard to...	All Establishments
Supply of electricity	41.1%
Water supply ¹⁾	50.2%
Access for employees	50.7%
Access for customers	51.7%
Access to suppliers	48.1%
Security/law and order	62.3%
Condition of buildings	76.0%
Proximity to competitors	71.0%

¹⁾ N=295 because for about 20% of sample was not applicable

The most plausible explanation of firms' physical stickiness is shown above, where it appears that business owners are generally satisfied by their locations. These are likely due to firms preferring to be located in specialized clusters, thus in proximity to competitors. Besides this, access to customers, ease of commute for employees and surprisingly, even water and electricity provision are cited as reasons for continuing to stay in the same location.

Table 5: Impact of the launch of metrobus service by firm size

How beneficial...	Number of employees				
	All firms	1 – 3	4 – 6	7 – 9	10 or more
Beneficial for business **	73.6%	60.5%	86.3%	95.7%	91.3%
No impact on business ¹⁾	26.4%	39.5%	13.7%	4.3%	8.7%
Beneficial for employees**	51.6%	26.7%	76.9%	88.0%	86.4%
No impact for employees ²⁾	48.4%	73.3%	23.1%	12.0%	13.6%

¹⁾ N = 348 ²⁾ N = 351 ** p< .01

Most business owners show awareness of the construction of the BRT, likely due to the highly visible spectacle underway throughout the city. When asked if they see the BRT as a source of benefit to them,

most agreed yes, but with greater support among larger firms who supposedly require accessing customers and clients outside the greater Peshawar area. Similarly, in terms of benefits to employees, smaller firms see smaller potential impacts likely due to the unskilled nature of their workforce, as discussed earlier.

3.2 Public services

The delivery of basic public services, particularly those under the purview of municipal government such as water, sanitation and solid waste removal, form the lynchpin of any State's relationship with society. In addition, productivity-boosting services like energy might be delivered by the federal government, but their impacts are felt at the local level, particularly in manufacturing establishments. Public services however are not just confined to municipal services like water and sanitation, but rather take into account all key functions of government that could improve businesses' efficiency. For these reasons, understanding business owners' opinions regarding public service delivery's shortcoming and ways in which improvements bolster business growth is useful.

Table 6: Obstacles to current operations

How beneficial...	Number of employees				
	All firms	1 – 3	4 – 6	7 – 9	10 or more
Transport for employees ¹⁾					
Not an obstacle **	65.2%	82.0%	50.9%	29.2%	36.4%
Moderate to severe obstacle	34.8%	18.0%	49.1%	70.8%	63.6%
Transport for supply chain ²⁾					
Not an obstacle **	55.0%	65.4%	43.8%	37.5%	43.5%
Moderate to severe obstacle	45.0%	34.6%	56.2%	62.5%	56.5%
Electricity ³⁾					
Not an obstacle **	70.4%	77.8%	58.5%	64.0%	73.9%
Moderate to severe obstacle	29.6%	22.2%	41.5%	36.0%	26.1%
Water/sanitation/hygiene ⁴⁾					
Not an obstacle **	83.5%	90.5%	76.4%	64.0%	82.6%
Moderate to severe obstacle	16.5%	9.5%	23.6%	36.0%	17.4%
Corruption ⁵⁾					
Not an obstacle **	86.8%	94.9%	77.8%	65.0%	77.3%
Moderate to severe obstacle	13.2%	5.1%	22.2%	35.0%	22.7%
Cost of doing business ⁶⁾					
Not an obstacle **	24.7%	16.3%	35.7%	38.5%	52.9%
Moderate to severe obstacle	75.3%	83.7%	64.3%	61.5%	47.1%
Competition ⁷⁾					
Not an obstacle	41.1%	44.5%	36.2%	41.7%	28.6%
Moderate to severe obstacle	58.9%	55.5%	63.8%	58.3%	71.4%

¹⁾ N = 330 ²⁾ N = 331 ³⁾ N = 334 ⁴⁾ N = 333 ⁵⁾ N = 272 ⁶⁾ N = 239 ⁷⁾ N = 246 ** p < .01

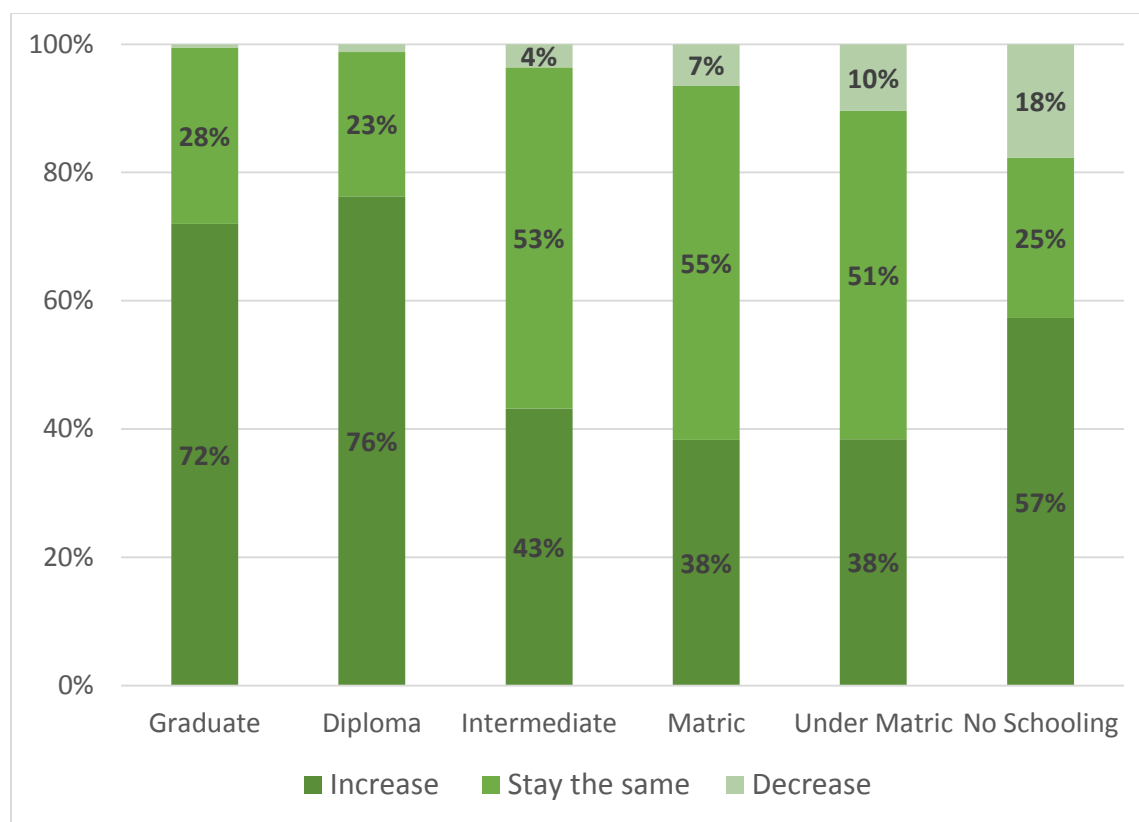
Perhaps unexpectedly, the percentage of businesses saying public services like transport (65.2%), electricity (70.4%), water (83.5%), and corruption (86.8%) are not an obstacle to their business operations is very high. While private means for transport, electricity and water are widely popular in Peshawar, the response to corruption is surprising. This is particularly surprising since corruption was in high public focus during the 2018 general election, the buildup for which was in full swing during the time of this survey. This might indicate local businesses' acceptance of corruption as part of their business environment, as only 5% indicated corruption is a moderate to severe concern. On the other hand, cost of doing business (24.7%) and competition (41.1%) are bigger obstacles, with cost of doing business a particularly prominent problem for smaller establishments and competition being an issue for larger ones.

When asked if transport for employees is a moderate to severe obstacle, only 18.0% of smallest firms but over 2/3rd of larger firms indicated this was a moderate to severe concern. When asked the same question for transport supply chains, these numbers were 34.8% and 56.5% respectively, showing that narrow streets preventing access to larger vehicles is of particular concern. In the case of quintessential public services like electricity and water, these percentages are significantly smaller at 22.2% and 26.1%, and 9.5% to 17.4% respectively. Even though water is a more fundamental public service than transport for average households, firm profitability is more directly associated with the former.

3.3 Education and workforce quality

A further indicator of the need to focus on human capital is suggested by Figure 3, which summarizes interviewees' responses when asked as to their expectations over the next five years of their establishments' demand for employees with varying education. Though only about half of the respondents answered these questions, a clear pattern emerges. Roughly three-quarters of the establishments anticipate increased demand for the two highest levels of education: Graduate (72%) and Diploma (76%). While almost no establishments expect demand for employees with the two highest levels of education to decrease, projected decreased demand for employees is seen among those with lower levels of education, particularly those with no schooling (18.0%). Interestingly, but consistent with the types of establishments found in the inner city, more than half of the respondents expected to increase employment of workers who had never been to school (57%).

Figure 3: Projected Demand for Employers by Level of Education



3.4 Establishment characteristics

Keeping in mind issues of missing data and the limits of sample size, both of which are particularly acute for establishments with ten or more employees in our sample, there are several findings that suggest areas for further study and may have policy implications.

For example, recalling that about three-quarters of the establishments are rented and not owned, the upper panel of Table 7 illustrates that there is no difference in firm size based on ownership. Rented establishments are somewhat more likely to have three or fewer employees (55.6%) than those that own their facilities (50.0%), but so too are rented establishments more likely to have ten or more employees (7.4%) than those that own facilities (2.9%). These differences are not only statistically insignificant, but are also so small as to be substantively insignificant even with a larger sample, especially as there is relatively little missing data for firm size and ownership.

Despite the limitations of missing data the lower panel of Table 7 suggests interesting relationships between ownership and mean gross sales and full-time wages. Employees in rented establishments earn slightly more on average (12,759 PKR) than those where the facilities are owned (12,407 PKR), but the difference is not statistically significant. The average gross sales of rented establishment are lower (2,166,935 PKR) than those where the facilities are owned (3,523,346 PKR) and this difference is statistically significant. Finally, combining average sales with firm size, average sales per worker are lower in rented establishments (541,370 PKR) than in owned establishments (684,086 PKR) suggesting higher productivity among owned establishments, though this difference too is not statistically significant in the pilot data.

Table 7: Business characteristics by establishment ownership

	Rent establishment	Own establishment
Firm size		
1 – 3 employees	55.6%	50.0%
4 – 6 employees	30.0%	39.2%
7 – 9 employees	7.0%	7.8%
10 or more employees	7.4%	2.9%
Total (N=372)	100.0%	100.0%
Average wages full time employee	12,759 PKR	12,407 PKR
Average gross sales +	2,166,935 PKR	3,523,346 PKR
Average sales per worker	541,370 PKR	684,086 PKR

+ p < .10

Following up on the suggestion of a relationship between firm size and productivity in Table 7, Table 8 looks more closely at how sales, wages, and rent vary with firm size. Average gross sales are lowest in establishments with three or fewer employees, but average sales per worker are highest in the same firms as well. Looking at wages, these are lowest in the smallest of firms and highest among those with ten or more employees. Average rents are also lower for small establishments than for larger establishments, but once firm size is taken into account the average rent per worker is lowest among the larger firms. If these pilot findings prove to be robust with a larger sample and less missing data, then it appears that economic gains may be found by focusing on worker productivity in firms with ten or more employees. Though the largest firms pay the least per worker in terms of rent, they pay the highest average wages and have the lowest average sales per worker of all establishments in the sample.

Table 8: Business characteristics by firm size

	Average number of employees			
	1 – 3	4 – 6	7 – 9	10 or more
Average gross sales	1,651,525	3,028,831	3,966,000	3,350,000
Average sales per worker	714,533	621,959	504,905	247,567
Average full time wages **	11,476	12,740	14,786	14,844
Average rent 1)	28,388	31,129	64,625	45,615
Average rent per worker 1) *	13,419	6,637	7,928	3,009

1) Excludes owned establishments. * p < .05 ** p < .01

Using the establishment classification typology introduced above, it appears that there is also no clear relationship between establishment type and ownership. The greatest outliers are the two types that each make up less than one percent of the sample. It is also noteworthy that fewer of the businesses

where the establishment types is unknown rent their facilities. This may, however, be a data collection artifact, since many of these unknown businesses simply use a person's name as the business name and may well fall into any of the other categories.

Table 9: Establishment Type by Ownership

Establishment Type	Percentage of Sample	Rent Establishment
Furnishings, housewares, hardware	10.1%	73.2%
Electronics, appliances	8.7%	74.3%
Motor vehicles, sales and service	0.5%	50.0%
Food, beverages, accommodations	11.1%	68.9%
Clothing, including shoes, jewelry, cosmetics	16.5%	78.8%
Medical, pharmacy, optical	4.0%	68.8%
Other retail, including general retail	24.0%	76.8%
Other services	0.7%	100.0%
Unknown	24.3%	63.5%
Total (N=404)	100.0%	

The likelihood that businesses in the unknown category are not of any one type is further supported by Table 10, which looks at establishment type by firm size, since across all types of establishments 53.9% of those sampled have three or fewer employees and those of the unknown type 55.3% also have three or fewer employees. Firms with the largest number of employees are primarily found within two categories: furnishings, housewares, hardware (10.5%) and electronics, appliances (17.1%). An even higher proportion is found among businesses classified as motor vehicles, sales and service (50.0%) but these establishments make up less than one percent of the sample. Despite these differences, with nine types of establishments and four size categories there is not enough data for a valid test of statistical inference as to the relationship between establishment and firm size. Limiting the analysis to only firm types making up a large share of the sample, as well as combining firms with seven to nine employees and with ten or more employees, addressed some of the statistical limitation, however there were still no significant relationships between establishment type and ownership or firm size.

Table 10: Establishment Type by Firm Size

Establishment Type	Firm Size			
	1-3 employees	4-6 employees	7-9 employees	10 or more employees
Furnishings, housewares, hardware	44.7%	39.5%	5.3%	10.5%
Electronics, appliances	37.1%	40.0%	5.7%	17.1%

Motor vehicles, sales and service	0.0%	50.0%	0.0%	50.0%
Food, beverages, accommodations	50.0%	25.0%	20.5%	4.5%
Clothing, including shoes, jewelry, cosmetics	69.7%	24.2%	3.0%	3.0%
Medical, pharmacy, optical	56.3%	25.0%	12.5%	6.3%
Other retail, including general retail	53.7%	35/8%	5.3%	5.3%
Other services	66.7%	33.3%	0.0%	0.0%
Unknown	55.3%	34.2%	6.6%	3.9%
Total (N=375)	53.9%	32.5%	7.2%	6.4%

4 Policy Implications

In the absence of any current and reliable datasets on urban spatial form and patterns of economic activity within them, policymakers have been making decisions on the basis of at best incomplete and at worse misleading information. While preliminary, the findings from this pilot study offer useful insights for local and provincial authorities in Peshawar charged with making key policy decisions. Clearly, the walled city's infrastructure requires major overhauling, its governance system needs reforms and its dilapidated built environment requires creative ways to bolster private business investments. One means to do this may be to increase the proportion of establishments in the area that are owned rather than rented. Just as obviously there is a need for the educational qualifications and productivity of those employed in the walled city.

4.1 Public service delivery

The relatively poor state of public service delivery indicates a strong sense among business owners that the government's services are grossly inadequate. This may in part be contributing to informality in the economy since the business community is unclear on what value, if any, their tax payments would bring back to them. Only 40.2% respondents reported even having a national tax identity number, implying that most businesses simply have not registered with tax authorities. This implies that the local or higher levels of government earn inadequate revenues to reinvest into urban neighborhoods, thus the poor state of public service delivery is largely unsurprising.

The walled city's highly congested built environment significantly increases the difficulty level of retrofitting urban infrastructure like piped water service or a new road. This is in part responsible for the arguably inadequate level and quality of municipal services, not including fundamental human capital developing sectors like health and education. In addition, the city's public transport system is practically dysfunctional and completely inadequate for meeting the needs of workers, clients and business owners alike. The upcoming Peshawar BRT system, which includes feeder bus routes, will likely transform the mobility landscape in the city.

4.2 Increase educational qualifications to meet employer demand

The findings in Section 3.3 clearly indicate the demand for workers with higher levels of education, so young people ought to be encouraged to pursue further education. A particular emphasis on younger workers is warranted as the benefits to them and to the local economy are likely to be greatest as they have longer work lives ahead of them. Increasing the educational qualifications of older workers is less realistic as many may already have family responsibilities that limit the time available to obtain further education. Moreover, the projected increase in demand among half of the establishments for workers

with no schooling means that even the least educated workers are likely to still be able to find employment in the next five years.

4.3 Increase the productivity of workers in large firms

As noted above average wages for full-time workers are highest among establishments with ten or more employees, while the same establishments also have the lowest average sales per worker. Given that these establishments also have the lowest rental costs per worker, increasing the productivity of these establishments should focus on the infrastructure surrounding them and the physical capital they use, as well as the human capital of those they employ.

4.4 Increase the share of establishments that are owned rather than rented

The findings show that establishments that are owned rather than rented have higher average gross sales. This relationship appears to hold regardless of firm size, as the findings also show that ownership is unrelated to firm size. Incentives that encourage ownership (e.g., lower utility and tax rates for businesses that are owned rather than rented, or higher tax rates on rental income) should be considered, especially as most establishments have been in their current location for a number of years.

4.5 Future research

This pilot project provides valuable insights for future fieldwork, including specific ideas for improving the efficiency and quality of business surveys, adjustments to the survey questionnaire depending on topics of focus, fieldwork protocols particularly coordination with local community leaders and linkages with policy priorities of local and provincial authorities. It is critical to coordinate all future activities with international development agencies, their contractors and donors, but only through local authorities charged with improving the delivery of public services to urban residents. Policymakers must be engaged at the very beginning of research processes, i.e. at the stage of problem identification, and they must help researchers shape the framing of relevant policy challenges.

Since construction for the Peshawar Bus Rapid Transit (aka TransPeshawar) is underway, service is likely to be launched in the coming few months and our survey found severe transport problems, we could conduct a rigorous impact evaluation of the social and economic implications of this PKR 68.9 billion public investment. The project features a 26 kilometer corridor with 32 stations running through the heart of the city's commercial areas, serving 0.5 million riders every day and thus transforming the city's transport landscape. Research projects could help policymakers determining the extent to which it provides accessible mobility to all segments of society, particularly vulnerable groups like the poor, elderly, the disabled and women of all strata. It would also provide critical analysis to determine whether the local labor market benefited from it, i.e. did worker-firm matching improve as workers were able to access a larger pool of jobs within a commuting radius.

This would require detailed baseline data collection, including household and business surveys in areas closer to and away from the BRT, prior to and following the launch of the service. Members of our team have conducted a similar study in Lahore recently, findings from which could be instrumental in designing this evaluation.

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