



BULLETIN

ECLAC

FACILITATION OF TRANSPORT AND TRADE IN LATIN AMERICA AND THE CARIBBEAN

Implementation of the Transantiago system in Chile and its impact on the transport sector labour market

Background

At the start of the millennium, Santiago had a public transportation system similar to those found today in several Latin American and Caribbean cities. With high levels of informal employment and market fragmentation, nearly 8,000 buses made up the service in 2005. They were organized into lines that operated 289 routes on a concession basis, and almost 80% of all journeys used one of the city's six main arteries, which caused severe problems of congestion (Gómez-Lobo, 2007).

Since a large proportion of the drivers' wages came from earnings that varied according to the number of passengers they carried (payment was made for each ticket issued), there was a perverse incentive for operators to drive aggressively, fighting to pick passengers up off the streets and thus endangering road safety. In 2005, on average, a fatal accident involving Santiago public service buses occurred every three days (Díaz, Gómez-Lobo and Velasco, 2004).

Many contracts were informal, drivers had to both drive and collect fares and, in general, labour protection was precarious. All this, in conjunction with the earnings system described above, allowed and encouraged working days that exceeded the maximum hours prescribed by law and recommended for safe driving.

There were also problems with the quality of the buses: inadequate accessibility for people with reduced mobility, high levels of pollution, excessive journey times and low-quality services (Gómez-Lobo, 2007).

This issue examines how the formalization of the public transport sector fuels increased demand for professional drivers to meet service needs, based on the experience of implementing the urban transport system that was launched in the city of Santiago in 2007.

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Background



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In that context, the Transantiago system comprehensively restructured Santiago's public transport. This involved integrating the fares and physical infrastructure of the Santiago Metro underground network and the bus system; grouping surface routes into concessions for feeder zones and trunk lines; reducing the bus fleet; and creating a financial administrator responsible for providing each operator with a payment system and technology and for managing the network's resources. All of this meant a total change to the system's business model and structure. It also entailed changes to drivers' contracts and working conditions which, in the short term, led to a shortage of professional drivers that today still affects Santiago's public transport system.

At a time when a number of the region's cities are restructuring their urban public transport systems, this *FAL Bulletin* aims to provide information so that authorities can anticipate the labour-related repercussions that formalizing a transport network can have on system operations. The Chilean experience described herein also highlights how adequate public-private coordination through the proper use of incentives can help address the problem.

I. Transantiago: implementation and current performance

Transantiago's original design sought to improve the quality and coverage of public transport in the Chilean capital. Tenders for new buses were issued, in preparation for the

creation of a system of trunk and feeder routes that aimed to optimize the number of vehicles needed. The reforms also provided for integration with the fares and physical infrastructure of the Metro, the adoption of a contactless card payment system and the creation of a financial administrator that would be responsible for providing each operator with a payment system and technology and for managing network resources. In addition, no operating subsidies from the State were to be required.

Upon its launch in February 2007, however, Transantiago fell far short of expectations and, despite the goals set, the results of the project's initial implementation were even poorer than those of the earlier system it was intended to replace. It quickly became apparent that the bus fleet had to be increased, required infrastructure to prioritize public transport had to be built, State funding for its operation had to be incorporated, and routes and operator contracts had to be modified, among other challenges.

For example, while the original design provided for only 5,100 buses, 5,975 were in service by the end of 2007 and, by 2016, the total had risen to 6,550. The number of bus routes increased from 276 to 379 over the same period, to address the demands of users who felt that the change had adversely affected their connections with the rest of the city or who shunned the transfers that the trunk-and-feeder system offered. When Transantiago was introduced, there were only 99 kilometres of priority bus lanes; by 2016, the total had risen to 303. All of these issues are illustrated on table 1.

Table 1
Evolution of the Santiago public transport system, 2007–2016

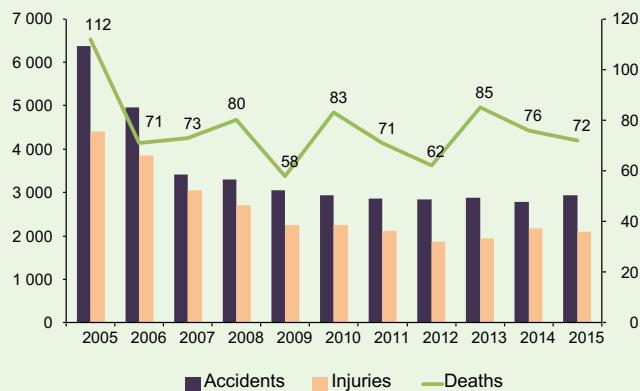
Buses	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual transactions (millions)	892	1 165	1 207	1 187	1 088	1 036	1 010	973	922	881
Average transactions per working day	3 173 941	3 661 139	3 824 828	3 633 556	3 312 565	3 184 289	3 327 495	3 227 563	3 061 457	2 928 639
Number of buses	5 975	6 399	6 572	6 564	6 165	6 298	6 493	6 513	6 550	6 646
Number of routes	276	321	334	358	351	374	368	371	379	378
Jobs	–	607 178	626 527	650 003	626 647	642 964	665 980	674 391	676 685	682 642
Kilometres travelled (millions)	371	481	487	512	483	469	464	460	460	459
Length of road network covered by buses (km)	2 100	2 545	2 683	2 692	2 732	2 766	2 770	2 790	2 817	2 821
Number of stops	9 397	9 595	10 492	10 809	11 188	11 165	11 271	11 325	11 328	11 339
Segregated roads (km)	11	32	45	62	62	62	68	69	70	72
Exclusive roadways (km)	8	31	31	31	31	31	31	31	31	31
Bus-only lanes (km)	80	114	117	119	119	119	119	119	–	–
Bus-only lanes (km/direction)	–	–	–	–	–	–	–	161	180	200
Monitoring cameras	–	–	–	–	110	110	234	234	266	273

Source: Metropolitan Public Transport Board/Ministry of Transport and Telecommunications (DTPM/MTT), *Informe de Gestión 2015-2016*, 2017 [online] www.dtpm.gob.cl.

The changes required impacted the system's budget, and so a special law was enacted to provide Transantiago with an operating subsidy.¹ In 2016, a total of 430 billion Chilean pesos were spent, on top of revenues in the amount of 563 billion pesos (equal to US\$ 678 million and US\$ 888 million, respectively). That equates to an operating subsidy of almost 43%, an amount that covers part of the new Metro infrastructure as well as all the system's discounts for students and the elderly.²

As regards road safety, there was a reduction of more than 30% in the number of accidents involving service buses (figure 1). In 2006, the final year of the old system, buses were involved in a total of 4,951 accidents, a figure that fell to 3,406 in 2007 following the reforms. The lowest figure —2,787 accidents— was reported in 2014, but in 2015 it rose again to 2,946. The numbers of people injured and killed in those accidents follow a similar pattern. For example, the number of deaths in such accidents fell by 35%, from 112 to 72, between 2005 and 2015.

Figure 1
Accidents involving urban buses in Santiago



Source: Ministry of Transport and Telecommunications of Chile.

II. Impact of Transantiago on the professional driver labour market

One of the most visible changes resulting from the Transantiago system was in the working conditions of drivers. Under the new operating scheme, one of the requirements the authorities imposed on the concession-holding companies was to prohibit the payment of individual incentives to bus drivers according to the numbers of tickets they sold, in an attempt to put an end to races between drivers to maximize passenger numbers.

At the same time, the operating companies were required to sign formal contracts with their workers, in keeping with the Chilean Labour Code. This was intended to ensure labour and social security rights for the sector's professionals, while guaranteeing higher service quality and road safety standards by limiting their driving hours.

The changes made to formalize the system meant an increase in the demand for professional drivers to provide the concessionaires' contracted services. As explained in the previous section, although the initial design of the system reduced the number of buses needed to operate in the city by nearly 3,000, stricter labour standards—particularly as regards the maximum hours that could be spent at the wheel—meant that more drivers per bus were needed, which immediately cancelled out the effects of reducing the fleet. This was compounded by the rapid growth in the number of routes and in the bus fleet that followed Transantiago's implementation. This effect has remained in place over time, leading to a significant increase in total driver numbers in recent years, as shown in figure 2.

Figure 2
Evolution of Transantiago driver numbers, 2013–2016



Source: Metropolitan Public Transport Board/Ministry of Transport and Telecommunications (DTPM/MTT), *Informe de Gestión 2015–2016*, 2017 [online] www.dtpm.gob.cl.

Despite the increased numbers of drivers, buses and kilometres travelled, the scant attractiveness of the sector to new generations and the restrictions on driver hours mean that the demand for drivers outstrips supply: at present, the shortfall is between 316 and 431 drivers and, in the medium term, that figure could rise. Government estimates indicate that between 8,180 and 11,400 new drivers could be needed by 2026, as a result of the system's further expansion and the imminent retirement of the current generation of drivers (SECTRA, 2016).

This shortfall in driver numbers, however, is affected not only by the number of people employed in the sector, but also by the system's effective operating capacity. Because

¹ Law No. 20.378, creating a National Subsidy for Fare-paying Public Passenger Transport [online] www.bcn.cl.

² Metropolitan Public Transport Board (DTPM), *Informe de Gestión 2015–2016*, 2017 [online] www.dtpm.cl.



of factors such as unjustified absences from work, medical leave, holidays, training, special days, licences suspended for traffic violations, strikes, trade-union privileges and days off, on average 19.5% of public transport bus operators lodge absences in any given month (table 2).

Medical leave —including cases involving situations of stress, depression, traffic accidents, as well as other problems— is the main cause of absenteeism, accounting

for 12.3% of the total. One factor that might be behind this figure is the prevalence of assaults suffered by drivers. In 2016, three operating companies said that an average of 607 assaults on drivers took place every year, for a total of 4,855 since Transantiago's launch.³ These attacks are mainly due to acts of vandalism or to the fact that in the event of delays or other service problems, the driver is the first target for grievances against the transport system. The most extreme cases involve the hijacking of buses during high-profile events, of which there were reportedly 144 between 2013 and 2015.⁴

At the same time, in a bid to reduce the high levels of fare dodging reported on the system, the operating companies' contracts were amended in 2012 to make them more responsible for ensuring that all passengers pay.⁵ All this has placed additional pressure on the drivers and fuelled additional conflicts with passengers, endangering their persons and mental health, and this might explain much of the psychiatric leave granted and the high levels of worker absenteeism in general.⁶

Table 2
Worker absenteeism in concessionaire companies
(Average drivers per month, as a percentage
of the total number of drivers)

Concessionaire companies	Holidays (percentage)	Medical leave (percentage)	Unjustified absences (percentage)	Absenteeism on special days (percentage)	Absenteeism due to trade-union privileges (percentage)	Total bus drivers not available per month (percentage)
Company 1	4.29	9.04	2.6	0.00	2.36	18.3
Company 2	6.21	17.0	0.85	0.00	0.43	24.5
Company 3	4.12	15.5	0.00	0.00	0.11	19.7
Company 4	4.06	8.25	3.41	0.00	2.82	18.5
Company 5	5.32	16.1	1.32	0.23	0.00	23.0
Company 6	5.02	11.6	0.98	0.89	0.09	18.6
Company 7	5.21	8.33	0.00	0.00	0.03	13.6
Average	4.9	12.3	1.3	0.2	0.8	19.5

Source: Undersecretariat of Transport, Roadways and Urban Transport Programme (SECTRA)/Sistemas Sustentables, *Análisis de la demanda de conductores del sistema de transporte público remunerado de pasajeros mediante buses en Santiago*, April 2016 [online] www.sectra.gob.cl.

At present, a large part of the personnel shortage is covered by paying drivers to work overtime in accordance with the current rules. That solution is, however, about to reach its limit: in 2016, more than 80% of drivers worked more hours than stipulated in their contracts, about half of them worked more than 45 hours of overtime a month and there were cases in which 30% of drivers spent more than 10 hours a day driving their buses. Moreover, 8.2% of the drivers in a selected sample reported having some other job in addition to their work as Santiago bus system operators (SECTRA, 2016). The overuse of overtime is creating a vicious circle: it impacts the health of drivers, and so they request medical leave,

which further reduces the effective supply of drivers. In addition, drivers who work longer hours represent an increased road safety risk.

³ See [online] <http://www.latercera.com/noticia/transantiago-reportan-dos-agresiones-por-dia-a-choferes-y-10-mil-buses-danados/>.

⁴ Ibid.

⁵ A change was made to the payments received by the operating companies whereby the largest proportion thereof was made dependent on number of passengers validating their electronic cards in the buses' scanners. This reduces the payment that is guaranteed per kilometre travelled, and so operators are more severely affected by fare dodging. To date, however, this measure has been unsuccessful in significantly reducing the problem.

⁶ Interview with Fernando Olivares, a trade-union leader and Santiago Metropolitan Transport System driver, 12 March 2017.

A. An unattractive profession

Although the driver shortage problem is clear, the challenge of making the sector attractive to new young professionals remains unresolved. This can be seen in the age of the workforce: with less than 10% of drivers under the age of 30, the average age is 48 and, if steps are not taken, by 2026 the average age of the system's drivers will be close to 60 (SECTRA, 2016).

There is a cultural explanation for the sector's inability to renew itself. As indicated by Herman Shirk, head of training at Redbus Urbano, the new transport system produced a profound change in how new drivers were created. Formerly, the buses practically belonged to their drivers, who parked them at their homes and looked after their upkeep there. Thus, their sons often began "repairing or maintaining engines" or driving the bus, and so becoming a driver was a natural progression in such families. In other words, the driver numbers that the system required arose almost spontaneously. This changed dramatically with the introduction of depots where the buses were stored, which severed the link between the driver and his vehicle.⁷ All this occurred with the launch of Transantiago.

An examination of potential earnings fails to indicate that the system is unattractive from that point of view. Drivers' average earnings stand at close to 668,000 pesos (SECTRA, 2016), which is more than the average gross income among the national population (505,477 pesos in 2015) and in the Metropolitan Region (573,425 pesos).⁸ This suggests that earnings potential is not the main barrier to finding new professional drivers.

The shift system, in some cases, works to make the system less attractive. Journeys to and from terminuses extremely early or late in the day can be complicated, and the shuttle vehicles are not sufficient to provide the workers with security. Furthermore, in some cases, shifts are assigned on a day-to-day basis, with no certainty for drivers regarding the hours they are to work the following week. This is a potential impediment to other social activities, which makes young people and other actors unwilling or unable to enter the profession.⁹

Another obstacle is the insecurity felt by drivers on the streets. Although robberies are practically a thing of the past now that drivers no longer collect fares and all payments are made electronically, there have been cases in which drivers have been attacked and buses vandalized or hijacked, as described in the previous section.

⁷ Interview with Herman Shirk, Head of Training at Redbus Urbano, 27 April 2017.

⁸ National Institute of Statistics, Supplementary Income Survey, 2015 Regional Analysis.

⁹ Interview with Fernando Olivares, a trade-union leader and Santiago Metropolitan Transport System driver.

III. Public-private measures to manage the shortage of professional drivers

A. Attracting drivers through free vocational training

Individuals seeking employment as professional drivers are required to pass examinations and meet a series of other demands, such as holding a class A3 professional driving licence, which in turn requires at least two years with a class B driving licence.

Since 2012, to facilitate the entry of new players, the Government of Chile has provided free professional driving courses for obtaining class A3 licences through its National Training and Employment Service (SENCE), under an agreement with the Ministry of Transport and Telecommunications. These courses have targeted both women and young people (Más Capaz programme) and the general public (Vocational Training for the Transport Sector programme and Work Scholarships programme). Through these initiatives, 2,528 people have earned professional licences for driving buses.¹⁰

Contrary to expectations, however, the initial phase of those efforts did not yield a significant increase in the supply of drivers. Recruitment of training course graduates was initially low on account of such factors as the lack of bus-driving practice at the agencies providing the courses and the problems of accommodating practice drivers at the operating companies. Furthermore, many of the students had enrolled in the courses in order to work in other sectors, such as mining or services.¹¹

As a result, the selection criteria were amended and coordination between the operating companies and course providers was improved (to include, for instance, the renting of buses for practice sessions); with this, the hiring rate among course graduates has risen to almost 70%.¹²

One fact to be noted is that according to statements made by a group of drivers interviewed by the National Training and Employment Service (SENCE), around 40% of them obtained their professional licences with company scholarships and only 30% did so with Government

¹⁰ Information provided by SENCE in an interview with Gaynor Fuentealba (national officer of the Vocational Training programme), Lorena Córdova (national transport sector officer of the Vocational Training programme) and Oscar Burotto (officer of the Personnel Training Unit, Metropolitan Regional Directorate, SENCE), 13 March 2017.

¹¹ Information provided by SENCE in an interview with Gaynor Fuentealba (national officer of the Vocational Training programme), Lorena Córdova (national transport sector officer of the Vocational Training programme) and Oscar Burotto (officer of the Personnel Training Unit, Metropolitan Regional Directorate, SENCE), 13 March 2017.

¹² Interview with Guillermo Muñoz, Director of the Metropolitan Public Transport Board, 20 March 2017.

scholarships (SECTRA, 2016). Thus, while the State can contribute, private stakeholders have a vital role to play in this challenge.

B. Improved, ongoing training to make the sector more attractive

One recurring issue identified in both the interviews conducted and the documents collected is the need to make bus driving more attractive as a profession. At a time when technical and vocational education is more accessible in Chile on account of the new free-of-charge policy, it seems unlikely that more people will want embark on careers as drivers.

One of the issues highlighted by the Director of the Metropolitan Public Transport Board, Guillermo Muñoz, is the need to professionalize the sector.¹³ The solution would be not only to provide courses for obtaining bus-driver licences, but also to create continuous training plans within the companies.

Thus, one first option would be to address the shortage of training systems in the companies. The 2016 Proforma SENCE report states that "Transantiago does not use formal, periodic, modern tools to assess the performance of its drivers, and neither is there an officially recognized skill certification system" (SENCE, 2016). It therefore recommends that the companies implement regular, systematic training programmes, led by professionals. The result would be better drivers and a better level of service.

The Proforma SENCE report also underscores the need for the training plans —both those used to recruit new hires and those given during employment in the system—to be more comprehensive. For example, it highlights the need for training that is more oriented to "the development and strengthening of general and individual tools, to enable drivers to better deal with the situations of stress they must face on a daily basis as part of their work" (SENCE, 2016). Inside the companies, Herman Shirk proposes requiring specialized courses for public transport driving, to strengthen such elements as a culture of safety and bus care.¹⁴

Improved, comprehensive training would facilitate the integration of new drivers into the system, thereby increasing the success rate of both the public-sector and in-house training programmes. Similarly, it would help ensure that the people best suited to the demands of the service and of dealing with users remain within the system. Likewise, offering drivers training during

their employment with a company could help make jobs with the system more attractive by offering better prospects for the future, either within the sector or elsewhere.

C. Inclusion of women

One of the strategies that the authorities have adopted is to include more women in the public transport sector. While the presence of women in the sector remains low, significant progress has been made. Thus, for example, in 2013 there were only 145 women Transantiago drivers. Three years later, as shown in figure 3, their numbers had risen to 485 (DTPM, 2017).

Figure 3
Number of Transantiago drivers by gender, 2013–2016



Source: Metropolitan Public Transport Board/Ministry of Transport and Telecommunications (DTPM/MTT), *Informe de Gestión 2015-2016*, 2017 [online] www.dtpm.gob.cl.

However, the increased number of female drivers is important not only because of its impact on the driver shortage, but also on account of its positive impact on the service. Some operators have noted that female drivers report lower rates of incidents with their vehicles and are less likely to be attacked by passengers.¹⁵ In this regard, Herman Shirk said that "as many women as are available in the courses" were required. Thus, while in 2011 only three companies had female drivers, six out of the seven current operating companies have female professionals driving their buses, most of whom obtained their licences through scholarships awarded by either the public or private sectors.¹⁶

One of incentives for women to enter the sector is the level of pay on offer, which is in general above the average earnings they could make elsewhere with the same

¹³ Interview with Guillermo Muñoz, Director of the Metropolitan Public Transport Board, 20 March 2017.

¹⁴ Interview with Herman Shirk, Head of Training at Redbus Urbano, 27 April 2017.

¹⁵ Interview with Francisca Reyes (professional in the User Experience Area, User Office, Metropolitan Public Transport Board) and Daniela Rubio (officer of the User Experience Area, User Office, Metropolitan Public Transport Board), 20 March 2017.

¹⁶ Information provided by the Ministry of Transport and Telecommunications, Metropolitan Public Transport Board.



qualifications. In connection with this, it should be noted that no significant gap is apparent between the earnings of men and women for the same work and working hours in this market (SECTRA, 2016).

Female drivers say that the system works well for them in terms of working hours. As indicated during the interview with Francisca Reyes and Daniela Rubio, this is because morning shifts enable them to spend the entire afternoon with their children, even though this means seeking out someone to help with getting their children up and out to school in the mornings when they are not there.¹⁷ In some cases, this might be on account of the proximity of the terminuses or depots to female drivers' homes: 33.3% of the respondents lived in the same district of Santiago as the depots where they were interviewed (SECTRA, 2016). This is particularly important, since it is women who provide unpaid care work in their families, do domestic chores and provide family transport services, and so they need jobs that allow them to perform that dual role.

Note should also be taken of the companies' concern for the safety of their female drivers: during high-profile events or on dates when high levels of social unrest are likely, women are not assigned shifts to avoid dangerous situations.

As regards their reaction to performing tasks traditionally done by men, the female drivers interviewed (SECTRA, 2016) said that in general, they received positive comments from the users and felt protected and safeguarded—both by the companies they worked for and by their colleagues—and so felt a greater personal motivation for joining the profession. Overall, the women said they were comfortable as bus drivers and planned to remain with their companies until retirement. Regarding problems with users, the female drivers interviewed said they avoided confronting fare dodgers, which led to fewer conflicts and minimized the possibility of incidents.

D. Inclusion of foreign workers

Increased levels of immigration indicate that employment opportunities exist in Santiago. Indeed, between 2010 and 2015, the number of immigrants arriving in Chile grew at an annual rate of 4.9%, giving it the fastest rate of expansion in Latin America and outstripping such countries as Mexico, Brazil and Ecuador (ECLAC/ILO, 2017).

The increased numbers of foreign workers seeking jobs in Chile could represent a source of new Transantiago drivers. However, one important barrier to entry into the system is that driving licences from their countries of origin cannot be easily homologated in Chile, with

the exception of those cases —such as Spain and the Republic of Korea— covered by reciprocity agreements. This is important because, as noted above, a professional licence requires at least two years with a regular driving licence. This makes it very difficult for foreigners to take the training courses offered by the Government or to enter the system on their own.¹⁸ In addition to this, Chilean immigration policy requires foreigners who want to work in the country to have an employment contract; as a result, they are unable to take the training courses needed for a professional licence.

IV. Conclusions and recommendations

When Santiago's new urban public transport system was implemented, the working conditions of the system's drivers were comprehensively restructured. Measures such as obligatory work contracts and maximum driving hours were imposed. Together with the need to increase its fleet and routes that emerged over time, this quickly led to a shortage of drivers.

Although a moderate shortage of drivers currently exists, it can be covered through the use of overtime. Nevertheless, the shortfall will grow in the coming years if major steps to attract new drivers into the system are not taken.

To address the shortage, the Chilean State and private sector have had to invest resources to train new drivers, in order to keep service standards at an acceptable level. Even so, there is still a need to increase training and to further improve it, both prior to hiring and on the job, in order to make the transport sector more attractive.

The hiring of women to work as bus drivers offers an opportunity for continued improvements in both addressing the labour shortage and raising service standards. While progress has been made, female drivers still account for a very low share of the total: a mere 2.6%. This is of particular significance given the favourable experiences that female drivers have reported, as well as the positive assessments they have received from the operating companies.

Immigrants could provide a source of new professional drivers for the system. As newcomers, however, they would require assistance in complying with domestic driving regulations.

Santiago's experience with formalizing its public transport system indicates that similar efforts in other cities are likely to produce a shortage of drivers. It is therefore

¹⁷ Interview with Francisca Reyes (professional in the User Experience Area, User Office, Metropolitan Public Transport Board) and Daniela Rubio (officer of the User Experience Area, User Office, Metropolitan Public Transport Board), 20 March 2017.

¹⁸ Interview with Carlos Melo, Undersecretary for Transport, 10 March 2017.

vital that any restructuring process keep in mind its potential multiple effects on the system's development and success, together with the negative repercussions that an inappropriate implementation could have on the operation and safety of public transport in the cities of Latin America and the Caribbean.

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