

Allowing Women to Drive in Saudi Arabia May Reduce Cost of Travel

Case Study: Riyadh

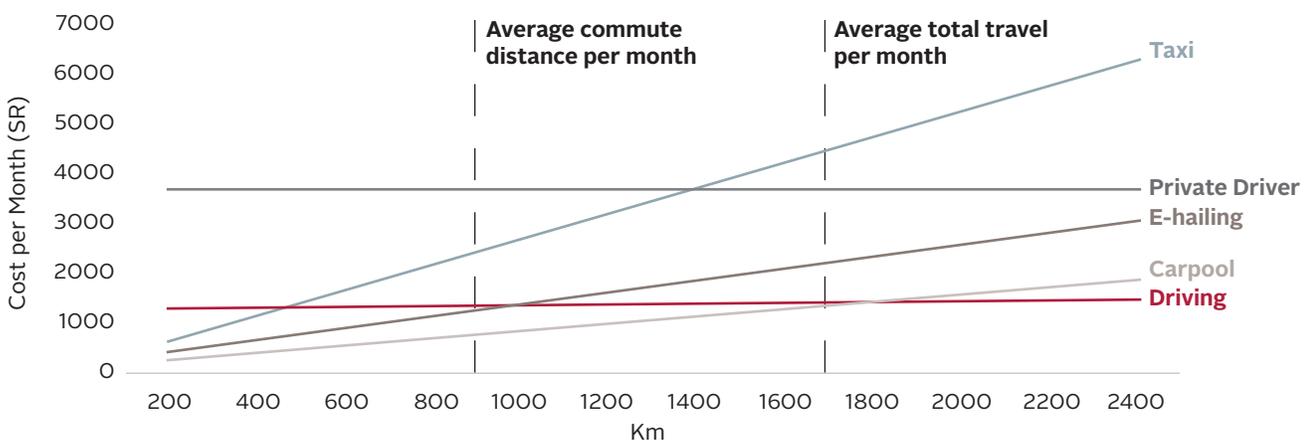
Saudi Arabia announced in September 2017 it will allow women to drive starting in June 2018. The decree followed a series of decisions supporting Vision 2030, a plan to diversify the economy, decrease dependence on oil, and engage Saudis in the labor force. Vision 2030 emphasizes access to employment, especially for a highly educated female population. Allowing women to drive will likely expand women's mobility and their prospects for employment in the long term, but to this point there has been no rigorous analysis of immediate financial gains that will result from the decree. How does owning a car compare to the options already available to women?

In this analysis, we estimate the costs of owning and operating a car, from leasing a vehicle to paying for fuel and repair, and comparing these costs to expenditure on existing modes of commute such as hiring a driver or using e-hailing services and taxis.

SUMMARY OF FINDINGS

Assuming an average commute distance of 864 km per month, derived using cell phone data, driving is cheaper than hiring a driver or a taxi. E-hailing services such as Careem would break even, and shared transportation services would remain more affordable for trips below 1,600 km per month (53 km per day).

Figure 1 | Transportation Costs by Mode and Distance



*Average commute per month assumes 40 trips per month, 21.6 km per trip (based on cell phone data)

**Average total travel per month assumes an additional 40 trips per month, 22 km per trip (based on cell phone data)



While trips to work or school are the most regular on a daily basis, we must take into account other destinations that increase average distance and cost of travel. Assuming that work trips only account for 50% of trips for a typical woman, total travel per month for all purposes may be as high as 1,744 km (average of 58.6 km per day). In this context, driving would be the cheapest option.

In this analysis, we rely on primary sources accessed by Evidence for Policy Design (EPoD) at Harvard Kennedy School through its relationship with the Saudi Human Resource Development Fund, along with administrative data and geospatial analysis.

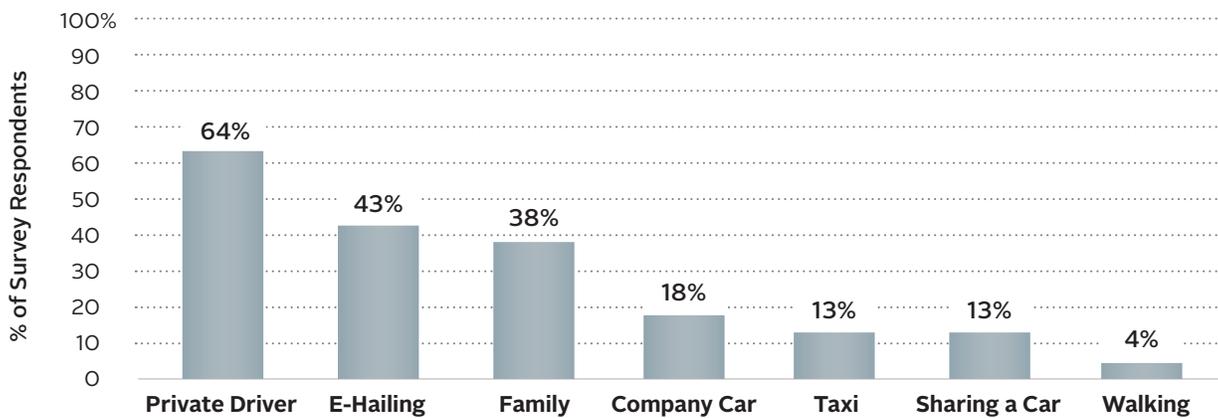
CURRENT COST OF COMMUTE TO WORK

Women currently rely on a limited number of services to commute to work (Figure 2). We conducted a commuter survey among 518 respondents in Riyadh in 2017 and found that 64% hire a private driver, 43% use e-hailing apps, 38% have a family member drive them, and 13% rely mainly on taxis or sharing a ride.

Calculating the cost of commute to work on each of these modes yields an average monthly cost of about 3,625 SR for a private driver, 2,455 SR for taxi, and 1,185 SR for an e-hailing service (e.g. Careem), while investing in a car could cost as low as 1,139.4 SR per month for five years and 250 SR per month thereafter.¹

Figure 2 | Common Modes of Commute

Source: EPoD Commuter Survey 2017



PRIVATE DRIVER

When we ask about the most common commute option, survey respondents indicate that the average salary for a private driver is around 1,832 SR per month. Given that most households hire non-Saudi drivers on a full-time

basis, we calculate recurring costs which include visa, residency, and medical insurance fees, roundtrip airfare every two years, salary, and a car. These bring the total cost to 3,625 SR per month.²

¹ Estimates are contingent on a set of assumptions. For driving, the cost depends on distance and other factors, such as the type of car, accessories, frequency and quality of maintenance, etc. For a private driver, the cost is based on survey data, and does not vary by distance. For taxi and e-hailing, the cost is purely a function of time and distance.

² At the same time, hiring a private driver would entail savings in other expenses, as private drivers often act as handymen, guards, and take on other responsibilities and errands that would otherwise incur costs on the household.

TAXI, E-HAILING AND CARPOOL

Assuming 20 working days per month and an average work commute distance of 21.6 km,³ the average monthly cost of commute is 2,455 SR for taxi, based on the official meter rate set by the government. This is greater than the cost of riding an e-hailing service such as Careem — estimated at 1,185 SR according to their published meter rate. A cheaper option, which has not yet reached Riyadh, is carpooling. An informal market for women to share rides in Riyadh results in varying costs, however carpooling is recently becoming available on Careem in some cities in the country. Hence, assuming a 40% discount on the cost of an e-hailing service, the monthly cost is estimated at 711 SR.

DRIVING

Available market data allows us to estimate the cost of acquiring a modest car. For example, selecting a car from Toyota, the most affordable option available is the Standard 1.3 Sedan 4Dr Petrol Manual, with a base cost of 40,800 SR. Assuming a monthly income of 3,000 – 5,000 SR, no down payment and a leasing period of 60 months, the required monthly installment is 889 SR, at an APR of 25.29%, with a one-time residual payment of 4,594 SR (14%).⁴ According to this financing model, the total cost of the car is estimated at 57,934 SR.

Given the car's fuel efficiency rate (18.9 km/L), market fuel prices at the time of analysis (1.35 SR/L), and assuming an average commute distance of 21.6 km (864 km per month), the average monthly cost of fuel is 62 SR. Hence, during the financial leasing period, the total costs per month for a single commuter, which include the monthly installment, maintenance, transport insurance, and gasoline, are averaged at about 1,139.70 SR. Over the longer run, when the car is paid in its entirety, the cost drops to about 250 SR per month.

Figure 3 | Cost of Work Commute by Mode

Assuming 21.6 km per trip, and 40 one-way work trips per month

SERVICE	AVERAGE COST PER TRIP	TOTAL COST PER MONTH
Taxi	61	2,455
E-Hailing	30	1,185
Carpool	18	711

Figure 4 | Cost of Owning and Driving a Car

Assuming 21.6 km per trip, and 40 one-way trips per month

CATEGORY	COST (SR)
Leasing Fee	889.0
Fuel (for commute to work only)	62.0
Maintenance and Repair	174.3
Insurance	14.4
Total	1,139.7

³ Chodrow PS, al-Awwad Z, Jiang S, González MC (2016) Demand and Congestion in Multiplex Transportation Networks. PLoS ONE 11(9): e0161738. <https://doi.org/10.1371/journal.pone.0161738>

⁴ Abdul Latif Jameel Finance

ACCOUNTING FOR NON-COMMUTE TRAVEL

Commuting to work is only one component of total trips. According to Arriyadh Development Authority (ADA), only 50% of all trips per household start or end at the workplace,⁵ while the rest are related to school, socializing, shopping and other purposes (Figure 5). We thus assume an extra 40 trips in addition to the 40 work trips.

With a personal car, the potential to save on cost and afford more trips is substantial. Given this model, along with data on the distance of average non-work trips, the increase in total distance travelled would result in a marginal increase in the cost of driving a car of 63 SR per month (5% of original cost). In contrast, taxis and e-hailing services have cost functions that steeply increase with distance. Accounting for all trips of an average employed woman (both work and non-work) would raise the cost from 2,455 SR to 4,910 SR for taxi, and from 1,185 SR to 2,372 SR for e-hailing. These represent cost increases of 100% of original cost each, compared to only 5% for driving. Investing in a car would thus make sense, for example, for e-hailers currently experiencing high marginal costs of additional trips on Uber or Careem.

Figure 5 | Trip Destinations per Household

Source: ADA

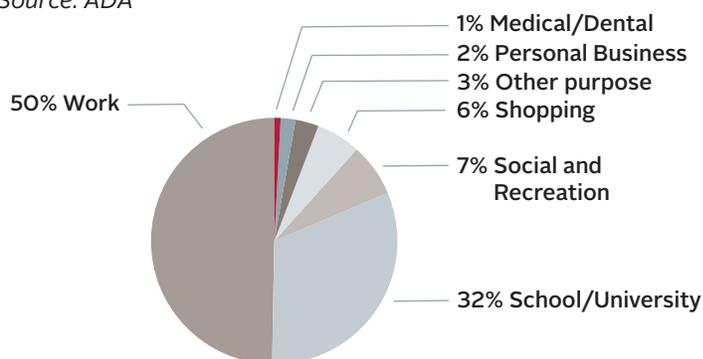


Figure 6 | Estimate Monthly Cost of Total Travel

Commute and Non-Commute

SERVICE	AVERAGE COMMUTE COST	MARGINAL INCREASE*	TOTAL COST PER MONTH
Private Driver	3,625	--	3,625
Taxi	2,455	2,497	4,910
E-Hailing	1,186	1,206	2,372
Carpool	711	723	1,424
Private car	1,139	62	1,203

*Marginal increase assumes an additional 40 trips at an average of 22km

WHO IS LIKELY TO ADOPT DRIVING?

Our estimates show that over the long run, owning and operating a car will cost less than hiring a private driver. It is reasonable to expect that women who currently rely on a private driver will have an economic incentive to switch to independent driving, as they have already invested in a car. Will this in fact translate to a change in their behavior? Will they give up their drivers?

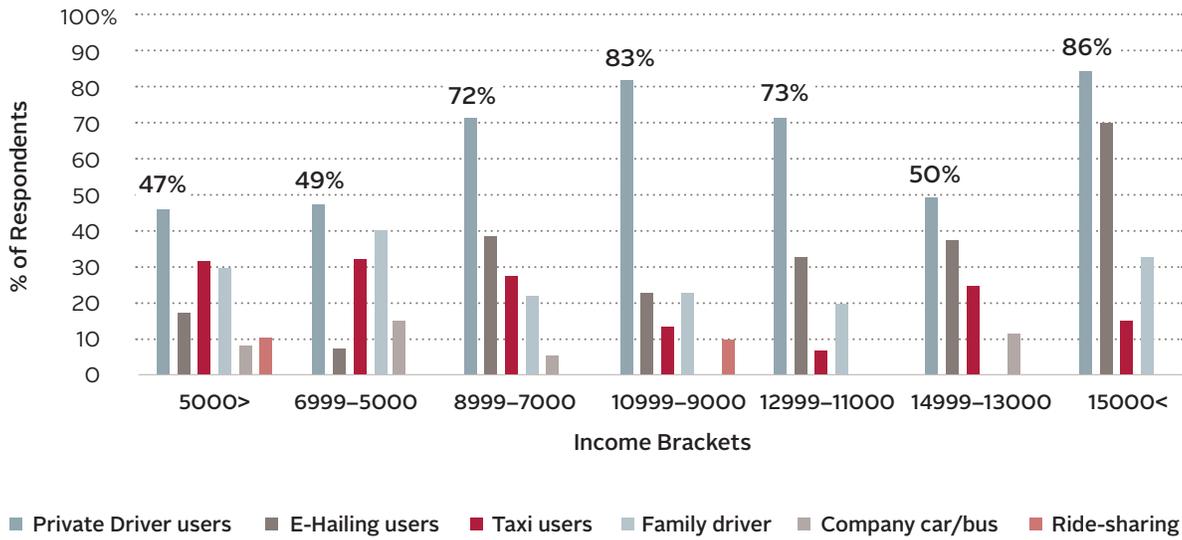
Our survey shows that overall, for 194 employed women, there is positive correlation between income and the likelihood of hiring a private driver. Working women earning more than 15,000 SR per month are most likely to hire a driver

(86%), whereas those earning less than 7,000 and 5,000 are relatively less likely (49% and 47%, respectively).

The reduction in cost as a result of dismissing a driver, as a proportion of income, could be as high as 7% for women earning above 15,000 SR. Women who earn less than 7,000 SR are expected to experience a relatively much larger reduction in cost as a proportion of their income. For the 5,000 – 7,000 SR earners, switching from a driver or a taxi to independent driving would result in savings ranging from 15% to more than 50% of income.

⁵ This calculation excludes trips that start and end at the home.

Figure 7 | Transportation Mode by Income



CONCLUSION

Allowing women to drive will result in a reduction in costs, especially in the long run, and for those who travel long distances. For the average employed woman traveling 59 km (37 miles) per day, driving is cheapest. It remains unclear which group will most likely take advantage of the new policy. Those earning below 7,000 SR (for example, a public sector teacher, the average private sector employee), would experience the greatest savings as a proportion of income, as high as more than 50%, from switching to driving.

However, there is potential for affordable commute beyond driving. For women who travel 1,600 km (53 km per day) or less, carpool would be the cheapest option. Accounting for social and environmental benefits, such as better air quality resulting from fewer cars on the road, would enable us to better understand the relative gains of using carpool.

While Riyadh and other cities in Saudi Arabia have yet to receive public transit services, major projects such as the Riyadh Metro and bus network will present an opportunity to drive cost of travel even lower.

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