

CHAPTER 1

Can Snow-Clearing be Sexist?

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It all started with a joke. It was 2011 and officials in the town of Karlskoga, in Sweden, were being hit with a gender-equality initiative that meant they had to re-evaluate all their policies through a gendered lens. As one after another of their policies were subjected to this harsh glare, one unfortunate official laughed that at least snow-clearing was something the 'gender people' would keep their noses out of. Unfortunately for him, his comment got the gender people thinking: is snow-clearing sexist?

At the time, in line with most administrations, snow-clearing in Karlskoga began with the major traffic arteries, and ended with pedestrian walkways and bicycle paths. But this was affecting men and women differently because men and women travel differently.

We lack consistent, sex-disaggregated data from every country, but the data we do have makes it clear that women are invariably more likely than men to walk and take public transport.¹ In France, two-thirds of public transport passengers are women; in Philadelphia and Chicago in the US, the figure is 64%² and 62%³ respectively. Meanwhile, men around the world are more likely to drive⁴

and if a household owns a car, it is the men who dominate access to it⁵ – even in the feminist utopia that is Sweden.⁶

And the differences don't stop at the mode of transport: it's also about *why* men and women are travelling. Men are most likely to have a fairly simple travel pattern: a twice-daily commute in and out of town. But women's travel patterns tend to be more complicated. Women do 75% of the world's unpaid care work and this affects their travel needs. A typical female travel pattern involves, for example, dropping children off at school before going to work; taking an elderly relative to the doctor and doing the grocery shopping on the way home. This is called 'trip-chaining', a travel pattern of several small interconnected trips that has been observed in women around the world.

In London women are three times more likely than men to take a child to school⁷ and 25%⁸ more likely to trip-chain; this figure rises to 39% if there is a child older than nine in the household. The disparity in male/female trip-chaining is found across Europe, where women in dual-worker families are twice as likely as men to pick up and drop off children at school during their commute. It is most pronounced in households with young children: a working woman with a child under the age of five will increase her trip-chaining by 54%; a working man in the same position will only increase his by 19%.⁹

What all these differences meant back in Karlskoga was that the apparently gender-neutral snow-clearing schedule was in fact not gender neutral at all, so the town councillors switched the order of snow-clearing to prioritise pedestrians and public-transport users. After all, they reasoned, it wouldn't cost any more money, and driving a car through three inches of snow is easier than pushing a buggy (or a wheelchair, or a bike) through three inches of snow.

What they didn't realise was that it would actually end up saving them money. Since 1985, northern Sweden has been collecting

data on hospital admissions for injuries. Their databases are dominated by pedestrians, who are injured three times more often than motorists in slippery or icy conditions¹⁰ and account for half the hospital time of all traffic-related injuries.¹¹ And the majority of these pedestrians are women. A study of pedestrian injuries in the Swedish city area of Umeå found that 79% occurred during the winter months, and that women made up 69% of those who had been injured in single-person incidents (that is, those which didn't involve anyone else). Two-thirds of injured pedestrians had slipped and fallen on icy or snowy surfaces, and 48% had moderate to serious injuries, with fractures and dislocations being the most common. Women's injuries also tended to be more severe.

A five-year study in Skåne County uncovered the same trends – and found that the injuries cost money in healthcare and lost productivity.¹² The estimated cost of all these pedestrian falls during just a single winter season was 36 million Kronor (around £3.2 million). (This is likely to be a conservative estimate: many injured pedestrians will visit hospitals that are not contributing to the national traffic accident register; some will visit doctors; and some will simply stay at home. As a result, both the healthcare and productivity costs are likely to be higher.)

But even with this conservative estimate, the cost of pedestrian accidents in icy conditions was about twice the cost of winter road maintenance. In Solna, near Stockholm, it was three times the cost, and some studies reveal it's even higher.¹³ Whatever the exact disparity, it is clear that preventing injuries by prioritising pedestrians in the snow-clearing schedule makes economic sense.

A brief snow-clearing coda comes from the all-right bogsphere,¹⁴ which reacted with glee when Stockholm failed to execute a smooth transfer to gender-equal snow-clearing in 2016: an unusually high snowfall that year left roads and pavements covered in snow and commuters unable to get to work. But in their rush to

celebrate the foundering of a feminist policy what these right-wing commentators failed to note was that this system had already been working successfully in Karlskoga for three years.

They also, in any case, reported the issue inaccurately. Heat St claimed¹⁵ that the policy was a failure in part because 'injuries requiring a hospital visit reportedly spiked' – neglecting to note that it was pedestrian injuries¹⁶ that had 'spiked', illustrating that the problem was not that pedestrians had been prioritised, but that snow-clearing as a whole had not been conducted effectively. Motorists may not have been travelling well, but neither was anyone else.

The following winter was much more successful: when I spoke to Daniel Heldén, a local councillor in Stockholm's traffic department, he told me that on the 200 km of joint cycle and pedestrian lanes that are now being cleared with special machines ('which make them as clean as in the summer') accidents have gone down by half. 'So it's a really good effect.'

The original snow-clearing schedule in Karlskoga hadn't been deliberately designed to benefit men at the expense of women. Like many of the examples in this book, it came about as a result of a gender data gap – in this instance, a gap in perspective. The men (and it would have been men) who originally devised the schedule knew how they travelled and they designed around their needs. They didn't deliberately set out to exclude women. They just didn't think about them. They didn't think to consider if women's needs might be different. And so this data gap was a result of not involving women in planning.

Inés Sánchez de Madariaga, an urban-planning professor at Madrid's Technical University, tells me that this is a problem in transport planning more generally. Transport as a profession is 'highly male-dominated', she explains. In Spain, 'the Ministry of Transportation has the fewest women of all the ministries both in

political and technical positions. And so they have a bias from their personal experience.'

On the whole, engineers focus mostly on 'mobility related to employment'. Fixed labour times create peak travel hours, and planners need to know the maximum capacity that infrastructure can support. 'So there's a technical reason for planning for peak hours,' Sánchez de Madariaga acknowledges. But needing to plan for peak hours doesn't explain why female travel (which doesn't tend to fit into peak hours, and therefore 'doesn't affect the maximum capacity of systems') gets ignored.

The available research makes bias towards typically male modes of travel clear. The United Nations Commission on the Status of Women found 'a male bias' in transport planning and a failure to address gender 'in system configuration'.¹⁷ A 2014 EU report on Europeans' satisfaction with urban transport describes male travel patterns as 'standard' even as it decries the failure of European public transport systems to adequately serve women.¹⁸ More galling are common planning terms such as 'compulsory mobility', which Sánchez de Madariaga explains is a commonly used umbrella concept for 'all trips made for employment and educational purposes'.¹⁹ As if care trips are not compulsory, but merely expendable 'me time' for dilettantes.

The bias is also clear in government spending priorities. Stephen Bush, the *New Statesman's* political correspondent, pointed out in a July 2017 article that although the Conservative government has consistently spouted austerity rhetoric, the last two Tory chancellors have made an exception for road-building, on which both have spent lavishly.²⁰ With living standards falling and Britain already having a fairly serviceable road infrastructure there is a whole host of areas that seem a potentially wiser investment, but somehow, both times, for both men, roads have seemed the obvious choice. Meanwhile, by 2014, 70% of councils had cut bus funding (the

most feminised form of transport), with a £19 million cut in 2013 alone, and bus prices had been rising every year.²¹

British politicians are not alone here. A 2007 World Bank report revealed that 73% of World Bank transport funding is for roads and highways, most of them rural or linking up cities.²² Even where roads are the right investment choice, where the proposed road leads is not a gender-neutral decision. In an illustration of how important it is that development projects are based on sex-disaggregated data, another World Bank report recounted the disagreement over a proposed road in one village in Lesotho. Women wanted the road to be constructed in one direction to 'facilitate their access to the nearest village with basic services'; men wanted it built in the opposite direction 'to enable them to reach the larger town and market more easily on horseback'.²³

The gender gap in travel data continues with the intentional omission in many transport surveys of shorter pedestrian and other non-motorised trips.²⁴ These trips, says Sánchez de Madariaga, are 'not considered to be relevant for infrastructure policymaking'. Given women generally walk further and for longer than men (in part because of their care-giving responsibilities; in part because women tend to be poorer), this marginalisation of non-motorised travel inevitably affects them more. Ignoring shorter walking trips also adds to the gap in trip-chaining data, as this kind of travel usually involves at least one journey on foot. In short, the assumption that shorter walking trips are irrelevant to infrastructure policy is the short of an assumption that women are irrelevant to infrastructure policy.

But they aren't. Men tend to travel on their own, but women travel encumbered – by shopping, by buggies, by children or elderly relatives they are caring for.²⁵ A 2015 survey on travel in London found that women are 'significantly less likely than men to be satisfied with the streets and pavements after their last journey by

foot', perhaps reflecting the reality that not only are women more likely to walk than men but also that women are more likely to be pushing prams and therefore be more affected by inadequate walkways.²⁶ Rough, narrow and cracked pavements littered with ill-placed street furniture combine with narrow and steep steps at numerous transit locations to make travelling around a city with a buggy 'extremely difficult', says Sánchez de Madariaga, who estimates that it can take up to four times as long. 'So what do young women with small kids do?'

Valuing cars over pedestrians is not inevitable. In Vienna 60% of all journeys are made on foot, in no small part because the city takes gender planning seriously. Since the 1990s Vienna's head of gender planning, Eva Kail, has been collecting data on pedestrian travel and has installed the following improvements: improved and signed crossing locations (plus forty additional crossings); retrofitted steps with ramps for prams and bikes; widened 1,000 metres of pavement; and increased pedestrian street lighting.²⁷

The mayor of Barcelona, Ada Callou, has shown similar determination to give her city back to pedestrians, creating what are called *superilles* or 'superblocks' – squared-off sections of the city with low speed limits open only to local traffic, with roads where pedestrians have equal priority with cars. Another example of easy changes that can be implemented to accommodate female travel patterns comes via London, where in 2016 the 'hopper fare' was introduced to the bus network.²⁸ Previously, every time a user boarded a bus they were charged for a new journey, but under the new system users can now make two trips in one hour for the price of one. This change is particularly helpful for women because they were disproportionately penalised by the old charging system. This is not only because of women being more likely to trip-chain, but also because women make up the majority (57%) of London's bus

users (partly because it's cheaper, partly because the bus is perceived as more child-friendly), and are more likely to have to transfer (which under the old system counted as a new trip).

The reason women are more likely to have to transfer is because, like most cities around the world, London's public transport system is radial.²⁹ What this means is that a single 'downtown' area has been identified and the majority of routes lead there. There will be some circular routes, concentrated in the centre. The whole thing looks rather like a spider's web, and it is incredibly useful for commuters, who just want to get in and out of the centre of town. It is, however, less useful for everything else. And this useful/not so useful binary falls rather neatly onto the male/female binary.

But while solutions like London's hopper fare are an improvement, they are by no means standard practice worldwide. In the US, while some cities have abandoned charging for transfers (LA stopped doing this in 2014), others are sticking with it.³⁰ Chicago for example, still charges for public transport connections.³¹ These charges seem particularly egregious in light of a 2016 study which revealed quite how much Chicago's transport system is biased against typical female travel patterns.³² The study, which compared Uberpool (the car-sharing version of the popular taxi app) with public transport in Chicago, revealed that for trips downtown, the difference in time between Uberpool and public transport was negligible – around six minutes on average. But for trips between neighbourhoods, i.e. the type of travel women are likely to be making for informal work or care-giving responsibilities, Uberpool took twenty-eight minutes to make a trip that took forty-seven minutes on public transport.

Given women's time poverty (women's paid and unpaid work combines into a longer working day than men's), Uberpool might seem attractive.³³ Except it costs around three times more than public transport and women are also cash poor compared to men:

around the world women have less access to household finances than men, while the global gender pay gap currently stands at 37.8% (it varies hugely from country to country, being 18.1% in the UK; 23% in Australia; and 59.6% in Angola).³⁴

There is, of course, an issue of resources here, but the problem is, to a certain extent, one of attitude and priorities. Although McKinsey estimates that women's unpaid care work contributes \$10 trillion to annual global GDP,³⁵ trips made for paid work are still valued more than trips made for unpaid care work.³⁶ But when I ask Sánchez de Madariaga if, in a city like London or Madrid, there is an economic argument for providing transport that caters for women's care responsibilities she replied immediately. 'Absolutely. Women's employment is a really important input to GDP. For every percentage increase in women's employment there is a greater increase in GDP. But for women to work, the city has to support this work.' And one of the key ways to do this is to design transport systems that enable women to do their unpaid work and still get to the office on time.

When it comes to fixed infrastructure like subways and trains, Sánchez de Madariaga explains, there is not much you can easily or cheaply do to address this historical bias. 'You can improve their accessibility,' she says and that's about it. Buses, on the other hand, are flexible and their routes and stops can and should be 'moved and adjusted for need', says Sánchez de Madariaga. This is, in fact, what Ada Callou has done in Barcelona, by introducing a new orthogonal bus route (a grid rather than a spiderweb, which is more useful for trip-chaining). Sánchez de Madariaga also argues that public transport needs to develop 'intermediate services, something between a car and a bus. In Mexico they have something called *terceros*, which are really small, like a mini mini minibus. And they have shared taxis. These have a lot of flexibility, and, I think, could and should be developed to support women's mobility.'

While much of the historical gender data gap in travel planning has arisen simply because the idea that women might have different needs didn't occur to the (mainly) male planners, there is another, less excusable, reason for it, and that is that women are seen as, well, just more *difficult* to measure. 'Women have much more complicated travel patterns,' explains Sánchez de Madariaga, who has designed a survey to measure women's care travel. And on the whole, transport authorities aren't interested in women's 'typical' travel habits. Anastasia Loukaitou-Sideris, a professor of urban planning at UCLA, tells me that 'sometimes there is the perception from the part of transit operators that everyone has universal needs. Men, women, everything is the same. And this is completely untrue.' She laughs in exasperation. 'Talking to women riders they bring up a whole slew of different needs that are not being taken care of.'

To make matters worse, transport authorities are compounding the existing gender data gap by failing to separate the data they *do* have by sex. The annual transport statistics report³⁷ created by the UK government's Department of Transport includes a single statistic (on the gender breakdown of driving-test pass rates – in 2015/16 44% of women passed versus 51% of men), and a link to a page on a government website that hosts a report on gender and walking. The report has nothing to say on the gender breakdown of bus or rail usage, for example, even though this information is vital for planning a transport system that properly serves all its users.

India's public transport agencies also don't separate their data by sex,³⁸ while a recent EU report bemoaned the paucity of gender-sensitive transport data, explaining that 'this kind of data is not collected on a regular basis in the majority of European countries.'³⁹ As in the UK, the US's Transport Statistics Annual Report only mentions women twice: once in relation to driving licences and once in

relation to walking.⁴⁰ Unlike the UK, however, these references are not even presented as usable statistics, just generalised statements.

A more hidden data gap comes courtesy of the way transport agencies around the world present their data. On the whole, all travel for paid work is grouped together into one single category, but care work is subdivided into smaller categories, some of which, like 'shopping', aren't distinguished from leisure. This is failing to sex-disaggregate by proxy. When Sánchez de Madariaga collected care-related travel data in Madrid, she found that the number of trips made for caring purposes almost equalled those made for employment purposes. And when she further refined the data by sex-disaggregating it, she found that care was 'the single and foremost purpose of travel for women, in much the same way as employment is the main purpose of men's travel'. If all travel surveys were to do this, she argues, planners would be forced to take care travel as seriously as employment travel.

If we really want to start designing transport systems that serve women as well as men, it's no good designing transport infrastructure in isolation, cautions Sánchez de Madariaga, because women's mobility is also an issue of overarching planning policy: specifically, the creation of 'mixed use' areas. And mixed-use areas fly in the face of traditional planning norms that, in many countries, legally divide cities into commercial, residential and industrial single-use areas, a practice that is called zoning.

Zoning dates back to antiquity (what was allowed on either side of the city walls, for example), but it wasn't until the Industrial Revolution that we started to see the kind of explicit division of what could be built where that legally separated where you live from where you might work. And, with its oversimplified categories, this kind of zoning has woven a male bias into the fabric of cities around the world.

figures, they added, were conservative, since their costings had not included 'the many additional health benefits of improving sanitation in resource-constrained urban areas.'²⁷

And there *are* many additional health benefits, particularly for women. Women get bladder and urinary-tract infections from holding in their urine; others suffer from dehydration or chronic constipation.²⁸ Women who defecate outdoors are at risk of a range of infections and diseases, including pelvic inflammatory disease, worm infections, hepatitis, diarrhoea, cholera, polio and waterborne diseases. Some of these diseases kill millions of people (particularly women and children) every year in India alone.²⁹

Health problems arising from a lack of public sanitary provision are not restricted to low-income countries. Canadian and British studies have revealed that referrals for urinary-tract infections, problems with distended bladders, and a range of other uro-gynaecological problems have increased proportionately to toilet closure; similarly, research shows that the chances of streptococcal toxic shock syndrome from sanitary protection are increased 'if there are no toilets available to change tampons during menstruation'.³⁰ And, increasingly, there *isn't* a toilet available. A 2007 study revealed that public-toilet closure in the US has been a trend for over half a century.³¹ In the UK, 50% of public toilets were closed between 1995 and 2013 – or, as in the public toilet closest to where I live in London, converted into the proverbial hipster bar.³²

Urban planning that fails to account for women's risk of being sexually assaulted is a clear violation of women's equal right to public spaces – and inadequate sanitary provision is only one of the many ways planners exclude women with this kind of gender-insensitive design.

Women are often scared in public spaces. In fact, they are around twice as likely to be scared as men. And, rather unusually, we have

the data to prove it. 'Crime surveys and empirical studies from different parts of the world show that a majority of women are fearful of the potential violence against them when in public spaces,' explains urban-planning professor Anastasia Loukaitou-Sideris. Analyses of crime data from the US and Sweden both show that women and men respond to similar environmental conditions differently, with women tending to be 'more sensitive than men to signs of danger and social disorder, graffiti, and unkempt and abandoned buildings'.

A UK Department for Transport study highlighted the stark difference between male and female perceptions of danger, finding that 62% of women are scared walking in multistorey car parks, 60% are scared waiting on train platforms, 49% are scared waiting at the bus stop, and 59% are scared walking home from a bus stop or station. The figures for men are 31%, 25%, 20% and 25%, respectively.³³ Fear of crime is particularly high among low-income women, partly because they tend to live in areas with higher crime rates, but also because they are likely to be working odd hours³⁴ and often come home from work in the dark.³⁵ Ethnic-minority women tend to experience more fear for the same reasons, as well as having the added danger of (often gendered) racialised violence to contend with.

This fear impacts on women's mobility and their basic right of access to the city.³⁶ Studies from Finland, Sweden, the United States, Canada, Taiwan and the UK all show that women adjust their behaviour and their travel patterns to accommodate this fear.³⁷ They avoid specific routes, times and modes of transport. They avoid travelling at night. In one Canadian study exactly half of the women surveyed 'indicated that fear prevents them from using public transportation or parking garages'³⁸ and studies from around the world find that fear of crime is 'amongst the most important reasons women choose not to use public transport'.³⁹ If they can afford to, they choose to drive or take a taxi instead.

The trouble is, many of them can't afford to. Most passengers are 'transit captives', meaning that they have no reasonable means other than public transport to get from one place to another.⁴⁰ This lack of choice, particularly affects low-income women, and those living in the global south – in India, for example, women have limited access⁴¹ to private transport and therefore rely on public transport to a far greater extent than men.⁴² These women adopt strategies such as taking a longer roundabout route or only travelling while accompanied. Some women go as far as quitting their jobs – a solution that is not limited to those on low incomes.⁴³ When I tweeted about women's experiences of harassment on public transport, one man replied to tell me about 'a very intelligent and capable woman' he knows, who 'gave up a really good job in the City and moved out of London because she hated being groped on the Tube?'

Clearly, there is an injustice here. But all too often the blame is put on women themselves for feeling fearful, rather than on planners for designing urban spaces and transit environments that make them feel unsafe. And, as usual, the gender data gap is behind it all. The official statistics show that men are in fact more likely to be victims of crime in public spaces, including public transport. And this paradox, says Loukaitou-Sideris, 'has led to the conclusion that women's fear of crime is irrational and more of a problem than crime itself'. But, she points out, the official statistics do not tell the whole story.

As women navigate public spaces, they are also navigating a slew of threatening sexual behaviours. Before we even get to the more serious offences like being assaulted, women are dealing on a daily basis with behaviours from men that make – and are often calculated to make – them feel uncomfortable. Ranging from catcalling, to being leered at, to the use of 'sexualised slurs [and] requests for someone's name', none of these behaviours is criminal exactly, but they all add up to a feeling of sexual menace.⁴⁴ A feeling of being

watched. Of being in danger – and in fact these behaviours can easily escalate. Enough women have experienced the sharp shift from 'Smile, love, it might never happen,' to 'Fuck you bitch why are you ignoring me?' to being followed home and assaulted, to know that an 'innocent' comment from a male stranger can be anything but.

But women don't report these behaviours, because who could they report them to? Until the emergence of groups like 'EverydaySexism' and 'Hollaback', which give women a space in which they can talk about the intimidating-but-just-short-of-criminal behaviours they face in public spaces on a daily basis, public awareness of this behaviour was more or less non-existent. When police in Nottingham started recording misogynistic behaviour (everything from indecent exposure, to groping, to upskirting) as a hate crime (or if the behaviour was not strictly criminal, a hate incident), they found reports shot up – not because men had suddenly got much worse, but because women felt that they would be taken seriously.⁴⁵

The invisibility of the threatening behaviour women face in public is compounded by the reality that men don't do this to women who are accompanied by other men – who are in any case also much less likely to experience this kind of behaviour. A recent Brazilian survey found that two-thirds of women had been victims of sexual harassment and violence while in transit, half of them on public transportation. The proportion among men was 18%.⁴⁶ So men who didn't do it and didn't experience it simply didn't know it was going on. And they all too often dismissed women who told them about it with an airy 'Well I've never seen it.' Another gender data gap.

And one that is exacerbated by how we collect the data. 'Large-scale data for the prevalence of sexual harassment is lacking,' explains a 2017 paper, not only because of under-reporting, but also because it is 'often not included in crime statistics'.⁴⁷ Added to this is the problem that sexual harassment 'is often poorly classified',

with many studies failing to either 'define harassment or codify harassment types'. In 2014, the Australia Institute found that 87% of the women surveyed had experienced verbal or physical street harassment, but data 'concerning the extent or form of incidences were not collected'.

The apparent mismatch between women's fear and the level of violence the official statistics say they experience is not just about the general stew of menace women are navigating. Women also aren't reporting the more serious offences. A 2016 survey of sexual harassment in the Washington DC metro found that 77% of those who were harassed never reported, which is around the same level found by Inmujeres, a Mexican government agency that campaigns on violence against women.⁴⁸

The reporting rate is even lower in New York City, with an estimated 96% of sexual harassment and 86% of sexual assaults in the subway system going unreported, while in London, where a fifth of women have reportedly been physically assaulted while using public transport, a 2017 study found that 'around 90% of people who experience unwanted sexual behaviour would not report it'.⁴⁹ An NGO survey of female metro users in Baku, Azerbaijan found that none of the women who said they had been sexually harassed reported it to the appropriate authority.⁵⁰

Clearly then, official police data is not showing the full picture. But although there is a lack of global data on 'the exact nature, location and time' of sexual crimes against women in public spaces, a growing body of research shows that women are in fact not being irrational.⁵¹

From Rio to Los Angeles men have raped women and girls on buses while drivers carry blithely along their routes.⁵² 'The truth is that every time I leave my house, I am scared,' said Victoria Juárez, a thirty-four-year old woman from Mexico where nine in ten women have experienced sexual harassment while using public

transport,⁵³ and female workers report that men hang around in cars 'to kidnap women getting on and off buses'.⁵⁴ Travelling to and from work is, they say, the most dangerous part of their day.

A 2016 study found that 90% of French women had been victims of sexual harassment on public transport;⁵⁵ in May that year two men were jailed for an attempted gang rape on a Paris train.⁵⁶ A 2016 Washington metro survey found that women were three times more likely than men to face harassment on public transport.⁵⁷ In April that year⁵⁸ a suspect was identified in an indecent exposure incident on the Washington metro; a month later he had escalated to raping a woman at knife-point on a train.⁵⁹ In October 2017 another repeat offender was arrested on the Washington metro: he had targeted the same victim twice.⁶⁰

'The message is unanimous across all articles of this special issue,' wrote professor of urban planning Vania Ceccato in her afterword to a 2017 special issue of the academic journal *Crime Prevention and Community Safety*, 'Women's Victimization and Safety in Transit Environments': 'sexual crime against women in transit (cases of staring, touching, groping, ejaculation, exposing genitalia and full rape) is a highly under-reported offence.'⁶¹

Women don't report for a variety of reasons. Some of these are societal: stigma, shame, concern that they'll be blamed or disbelieved. And there is little that authorities can do about this. That change has to come from society itself. But many women don't report for more prosaic issues that can be far more easily addressed.

For a start, women often aren't sure exactly 'what counts as sexual harassment and are afraid of the response of authorities'.⁶² Assuming they do realise that what has happened is wrong, they often don't know who it is they have to report to.⁶³ Around the world there is a lack of clear information for women on what to

do if they are sexually harassed or assaulted on public transport (although most authorities seem to have managed to install clear signage about what to do in the event of spotting a suspicious package). Sometimes, though, the lack of signage is because there really aren't any procedures in place.⁶⁴ And this leads to the next problem: the experiences of those women who *do* report.

In 2017 a British woman tweeted about what happened when she reported a man who was sexually harassing her on a bus.⁶⁵ After asking her what she expected him to do, the bus driver commented, 'You're a pretty girl, what do you expect?' Her experience echoes that of a twenty-six-year-old woman riding a bus in Delhi: 'It was around 9 p.m. A man standing behind touched me inappropriately. I shouted and caught the guy by his collar. I made the driver stop the bus too. But I was told to get off and solve it myself because other passengers were getting late.'⁶⁶

Fear of being dismissed was why Sarah Hayward, a former local councillor for my borough in London, didn't report. 'I was felt up on a packed Tube train when I was about twenty-two. I can't begin to explain the absolute terror of that feeling. And I just knew that if I said anything, people would think it was just that the Tube was packed.' The irony is, the Tube having been packed may well have been a factor in what happened to her: the data we have suggests that peak travel times coincide with peak sexual harassment times.⁶⁷ Hayward tells me that she still tries 'to avoid the Tube in rush hour'.

The lack of reporting procedures for sexual assault is also a problem in the sky. A 2016 *Slate* article told the story of Dana T. who, mid-flight between the US and Germany, woke up to find a hand squeezing her breast hard.⁶⁸ It belonged to the man sitting next to her. She told cabin crew who initially tried to make her sit back down. Eventually, they gave her a seat in business class, but although many of the crew were sympathetic, no one seemed to

know what to do. When they landed, the man simply got off the plane and went on his way. A similar story emerged in 2017: American Airlines crew refused to move a woman to another seat when it became clear the man next to her was masturbating.⁶⁹

The first step for transit authorities – which have a hugely male-dominated workforce from top to bottom – is to accept that they have a problem.⁷⁰ When Loukaitou-Sideris wanted to find out how US transit agencies address women's safety on public transport, she came across a gender data gap. She found only two papers from the 1990s, neither of which looked at the security needs of female passengers and which in any case were redundant given the huge changes that have been made to transport security post-9/11. There was a more recent paper from 2005, but it focused primarily on the response of US transit agencies to the threat of terrorism, 'and did not investigate women's concerns or their specific security needs'.

So Loukaitou-Sideris conducted her own survey. And she encountered some resistance from the male-dominated workforce she surveyed. 'You're assuming that the world is less safe for females,' replied the male chief operating officer of one agency. The male safety and security manager of another insisted that 'Safety and security issues and concerns are non-gender specific.' And in a clear example of the damage the gender data gap does, another (male) safety and security officer refuted the need for gendered planning on the basis that 'Statistical data for our system does not show females have a greater risk.'

Once they have accepted that they have a problem, step two for transport planners is to design evidence-based solutions. Of the 131 transit agencies (more than half of all the large and medium-sized transit operators in the US) that responded to Loukaitou-Sideris's survey, 'only one-third felt that transit agencies should really do something about it', and only three agencies *had* actually done anything about it. Perhaps unsurprisingly given the chronic lack of data

and research on women's safety in transport settings, Loukaitou-Sideris also found 'a significant mismatch between the safety and security needs and desires of female passengers and the types and locations of strategies that transit agencies use'.⁷⁰

Most of the agencies she surveyed had security strategies on their buses: 80% had CCTV; 76% had panic alarms; and 73% had public address systems. But the vast majority neither had, nor intended to install, security measures at bus stops. This is in diametric opposition to what women actually want: they are far more likely to feel scared waiting in the dark at a bus stop than they are to feel scared on the bus itself. And in fact, they are right to feel this way: one study found that people were over three times more likely to be a victim of crime at or near a transit stop than on the vehicle itself.⁷¹

The type of security transport agencies install also matters – and there is also a mismatch here. Transit agencies, possibly for cost reasons, vastly prefer technological solutions to hiring security officers. There is little available data on what impact CCTV has on harassment, but certainly repeated studies have found that women are deeply sceptical of its use, vastly preferring the presence of a conductor or security guard (that is, a preventative solution) as opposed to a blinking light in the corner which may or may not be monitored miles away.⁷² Interestingly, men prefer technological solutions to the presence of guards – perhaps because the types of crime they are more likely to experience are less personally violating.⁷³

But if paying for a full-time guard is expensive (although arguably worth it if it increases women's use of public transport), there are plenty of cheaper solutions available.⁷⁴ Loukaitou-Sideris tells me that 'the city of Portland has a digital timetable in the bus stop so you know when the next bus is going to come, meaning women don't have to wait for ages in the dark, simply because they don't

know the next bus is half an hour away. I admit, when I heard this presented as a radical solution I was shocked – in London it's far more unusual to come across a bus stop *without* a digital timetable.

Other evidence-based⁷⁵ solutions include transparent bus shelters for better visibility and increased lighting – not just at bus stops and metro stations themselves, but on the route to them.⁷⁶ The location of the bus stop is also important: 'sometimes even moving the bus stops a few feet up or down the block if it is in front of a well-used establishment' can make all the difference, says Loukaitou-Sideris. My personal favourite approach is the introduction of request stops in between official stops for women travelling on night buses: although women make up the majority of bus users overall, they are in the minority when it comes to night buses, and while we don't have data on why exactly this disparity exists, given the data we do have it seems reasonable to conclude that feeling unsafe might have something to do with it.⁷⁷

The good news for transport planners is that, other than increased security guard presence and lighting, none of these measures is particularly costly. And research conducted by Loukaitou-Sideris in Los Angeles found that there were specific bus stops that were hotspots for gender-based crime, suggesting that costs could be kept further in check by focusing on problem areas.⁷⁸ All each transport authority would need is its own data – and the will to collect it. But that will is lacking. In the US, Loukaitou-Sideris tells me, 'there is no federal incentive' for transit authorities to collect data. 'They aren't legally obligated to collect it and so they don't.' She doesn't buy what she calls their 'excuse' that they don't have the money.

In India (Delhi was ranked the fourth most dangerous public transport system in the world for women in 2014) following what came to be known as the 'Delhi gang rape', women are taking data collection into their own hands.⁷⁹ This assault, which

hit headlines around the world, began just after 9 p.m. on 16 December 2012 in south Delhi. Twenty-three-year-old physiotherapy student Jyoti Singh and her friend Avaniandra Pandey had just finished watching *Life of Pi* at the cinema when they decided to board one of Delhi's many private buses.⁸⁰ Their plan was to go home – but they never got there. The two friends were first severely beaten with a rusty iron rod – and then the gang of six men started to gang rape Singh. The attack (which included showing the metal rod inside her) lasted nearly an hour, and was so brutal it perforated her colon.⁸¹ Eventually, having exhausted themselves, the six rapists dumped the semi-conscious friends on the roadside, five miles from where they had boarded the bus.⁸² Thirteen days later, Singh died from her injuries. The following year, three women set up a crowd-mapping platform called Safe-City.⁸³ Women can report the location, date and time they were harassed, as well as what happened, 'so that others can view "hot spots" of such incidents on a map'. The data collected so far is revealing: groping is the most common type of harassment – ahead even of catcalls – and it is most likely to happen on public buses (likely because of overcrowding).

Innovative solutions like this are to be welcomed, but they are not a sufficient substitute for data collected and analysed by professional researchers. And this kind of data is severely lacking in all areas of urban planning, not just transport. A 2016 article in the *Guardian* asking why we aren't designing cities 'that work for women, not just men' cautions that the limited number of urban datasets 'that track and trend data on gender make it hard to develop infrastructure programmes that factor in women's needs'.⁸⁴ Even when we do start collecting data, there is no guarantee we will continue to do so indefinitely: in 2008 a UK-based database of research on gender and architecture was set up; by 2012 'Gender-site' had closed for lack of funds.⁸⁵ And when we don't collect and, crucially, use

sex-disaggregated data in urban design, we find unintended male bias cropping up in the most surprising of places.

Most women who use a gym will have experienced that moment of psyching herself up to walk into the free weights area, knowing that many of the men who dominate the space will regard her on a range from nuisance to freak. And yes, you *can* technically just walk in, but there's that extra mental hurdle to clear that most men simply don't face, and it takes a particular kind of self-confidence not to be bothered by it at all. Some days, you just won't feel like it. It's the same story in the outdoor gym in my local park; if it's full of men, I often give it a miss, not relishing the inevitable stares and all too clear sense that I don't belong.

The inevitable reaction from some quarters to such complaints is to tell women to stop being delicate flowers – or for feminists to stop painting women as delicate flowers. And of course some women aren't bothered by the leering and macho posturing. But women who do avoid these spaces are not being irrational, because there are plenty of accounts of hostility from men when women venture into supposedly gender-neutral shared exercise spaces.⁸⁶ Like transit environments, then, gyms are often a classic example of a male-biased public space masquerading as equal access.

The good news is that this kind of male bias can be designed out and some of the data collection has already been done. In the mid-1990s, research by local officials in Vienna found that from the age of ten, girls' presence in parks and public playgrounds 'decreases significantly'.⁸⁷ But rather than simply shrugging their shoulders and deciding that the girls just needed to toughen up, city officials wondered if there was something wrong with the design of parks. And so they planned some pilot projects, and they started to collect data.

What they found was revealing. It turned out that single large open spaces were the problem, because these forced girls to