



Risks and costs of mismeasurement in residential property

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Executive summary

This white paper presents findings and detailed analysis on the extent of measurement inaccuracies in residential properties (as calculated by typical floor plan suppliers to estate agents) and how these occur.

It is the result of an intensive research study using market-leading Spec technology. The study compared the size reported on floor plans used by estate agents of over 300 properties, with the outcome of Spec's accurately measured digital surveys.

The paper explores the impact on valuation, consumer trust and outlines the risks and penalties estate agents face in presenting inaccurate information.



Key findings



Using price per sq ft as a baseline, properties in London are on average mismeasured by

£33,800

and in the worst cases, hundreds of thousands of pounds.



For 1 in 8 properties, the property area stated on plans provided by estate agents varied by at least

100 sqft

from Spec's accurately measured size.





The average discrepancy across all properties was

54 sqft

enough for a small bedroom or study. In houses it was 92 Sq Ft.



In the worst cases uncovered, measurements were out by hundreds of square feet.



In

60%

of cases, the traditional floor plans over-stated the size.



Only

27%

of rooms are regular square or rectangle shaped, meaning 73% of rooms are irregular shapes and hard to measure accurately with old fashioned techniques.

Taking these findings, this paper presents a series of recommendations for the residential real estate sector to avoid liability impacts of mismeasurement by suppliers and create competitive advantage through superior, trustworthy data.

Why measurement matters





“How big is the property” is a fundamental question at the heart of every property transaction. Accurate property measurement is essential because:

- Property professionals need an accurate size in order to responsibly value the property
- Buyers and tenants want to know what they’re getting for their money
- Owners want to market the property in its best possible light

- Estate agents are legally liable if their particulars omit material information or contain inaccurate information about properties
- Lenders and insurers need accurate size data to measure risk against value

Accurate size assessment is therefore paramount to provide reliable, trustworthy data to everyone involved in property transactions.

Accurate valuation

In many markets around the world, price per Square Foot is the benchmark used to compare properties (all other things such as condition, contents, location, market conditions etc. being equal) and form an assessment of relative value.

For an average UK property of 1,100 Sq Ft¹ at a £300,000² asking price, **a difference of 10% in size at £300 per Sq Ft, equates to £33,000.**

In high value areas such as central London, average price per Sq Ft can easily exceed £700 per Sq Ft, so even

very small differences can have significant impacts, very quickly running into tens or hundreds of thousands of pounds. A 2013 investigation by the Financial Times³ found a case where a vendor was forced to reduce their asking price by £25,000 to reflect a reduction in size of just 68 Sq Ft.

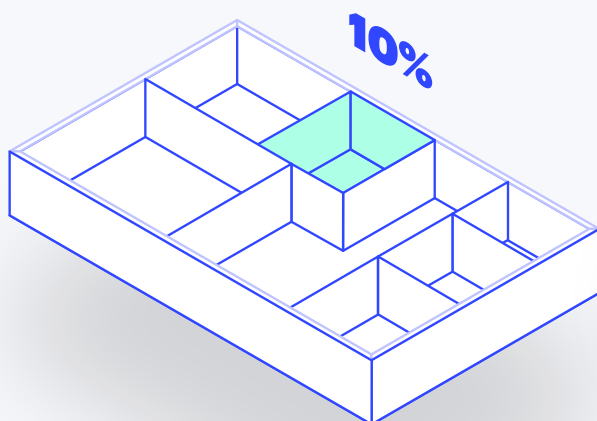
Variation and discrepancies in measurement therefore translate directly into significant risks of under or over valuing property and corresponding differences in the professional fees or commissions due to the parties involved.

Average Property size

UK property: 1100 sqft

10% = £33,000

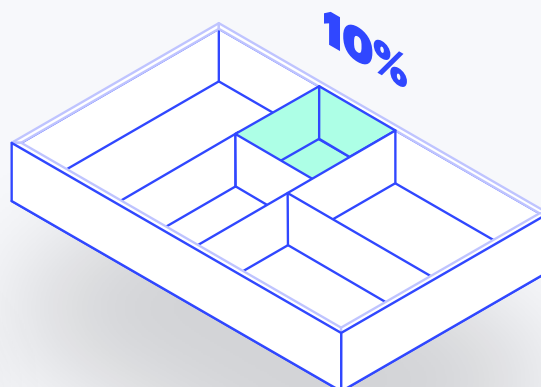
at an average of £300 per sqft



London property: 860 sqft

10% = £60,200

at an average of £700 per sqft





Marketing property without misleading

In the UK, the Consumer Protection from Unfair Trading Regulations 2008 (CPRs) and the Business Protection from Misleading Marketing Regulations 2008 (BPRs) now govern how estate agents should operate⁴. The previous Property Misdescriptions Act was repealed in 2013 because it did not apply to letting agents and the CPRs and BPRs both superseded and extended protections for consumers. For example, describing properties as, 'desirable' or in a 'quiet area' now need to have evidence to back up such statements.

Crucially, it's not just the eventual purchaser or tenant who is now considered a consumer, but *anyone* engaging with the agent, so **potential buyers and viewers of property have equal protection under the CPRs and agents can be liable for the information they provide to them accordingly.**

The newer legislation also holds agents liable not just for inaccuracies in what they *do* say, but also what they don't because the **CPRs require agents to provide "material information"**. The legislation requires consumers to be able to make "an informed transaction decision" based on "the average consumer needs, according to the context".

Current compliance guidance issued by the National Trading Standards Estate Agency Team⁵ states that misleading actions include *"misdescribing the main characteristics of property for sale, for example its price, location, number and size of rooms."*

Agents falling foul of this legislation can face fines or up to 2 years in prison along with professional and reputational consequences such as public 'naming and shaming' by trading standards or disbarment from professional associations. **"Buyer Beware" is no longer a defence.**

Consumer trust in property professionals

Agents already suffer from poor public perception on accuracy and suspicion that property advertisements won't reflect reality. This means there is a strong opportunity for agents to lead from the front and adopt the latest technology in measurement to demonstrate reliable, trustworthy data.

In 2013, the Financial Times⁶ reported that, where the same property was being sold by multiple agents, **more than half of the properties examined varied by as much as 300 Sq Ft.** In combination with the results of this Spec study, it is clear that there is widespread inconsistency in accuracy and data quality when it comes to measurements being provided to consumers by estate agents.

All agents in the UK have to be a member of one of two redress schemes in order

to legally operate⁷ - the Property Redress Scheme (PRS) or The Property Ombudsman (TPO) - and are subject to fines of £5,000 if they do not. Both schemes require adherence to legislation and codes of practice, for example the TPO code of practice, states estate agents must:

"take all reasonable steps that all statements that you make about a property, whether oral, pictorial or written, are accurate and are not misleading."

All material information must be disclosed and there must be no material omissions which may impact on the average consumer's transactional decision and where information is given to buyers or their representatives, it must be accurate and not misleading."





In a case highlighted by the TPO in 2016⁸, a property marketed by three different agents had three separate values reported for its size, varying between 664 and 745 Sq Ft. In a similar case adjudicated by the PRS⁹ resulting in £1,000 compensation, a buyer complained that one agent's floor plan was 215 Sq Ft larger (25%) than another agent's.

Whilst there is likely to be some allowance in legal cases for small variations in size, case law for valuation disputes¹⁰ provides an insight into what the courts consider a reasonable margin of error. In *K/S Lincoln and Others v CB Richard Ellis Hotels Limited* 2010 and *Webb Resolution Ltd v Esurv Ltd* 2012, Justice Coulson summarised his views:

- For a standard residential property, the margin of error may be as low as + or – 5%;
- For a valuation of a one-off property, the margin of error will usually be + or – 10%;
- If there are exceptional features of the property in question, the margin of error could be + or – 15%, or even higher in an appropriate case.

Valuations by nature rely upon more subjective factors (condition, contents, location etc) and availability of comparables when compared to objective factual measurement of physical dimensions, but it seems reasonable that **any discrepancy over 5% is likely to be considered significant and become a serious liability if reasonable care cannot be demonstrated.**

Careful selection of a floor plan supplier is therefore key to prevent unnecessary risk to estate agents' businesses and reputation.



Calculating dimensions and areas

The mathematics and principles of area calculation conceal significant potential for mismeasurement depending on the complexity of the property, approach and rigour employed.





Dimensions

When measuring in one dimension - from point A to B - it is relatively simple to mitigate against error. A well calibrated measuring device deployed between clearly delineated start points can deliver reasonable results. Dimensions are most commonly used to report the maximum width or length of a room.



Risks of dimension mismeasurement:

- Accurate measurement device
- pacing it out is not reliable, a professional measuring tape should be the bare minimum and ideally a portable laser measurer
- Measuring tapes sag and are difficult for one person to accurately control over distances longer than a metre and remain level
- Appropriate start and end points - selecting by eye isn't accurate and is subject to the measurers opinion of the width or length of the room
- Measuring by hand without tripods and levelling - modern laser systems are so accurate that just a small deviation in angle can alter the dimension recorded
- Measuring protrusions e.g. a chimney breast presents problems because it lacks end-points to base and reflect a laser pointer against

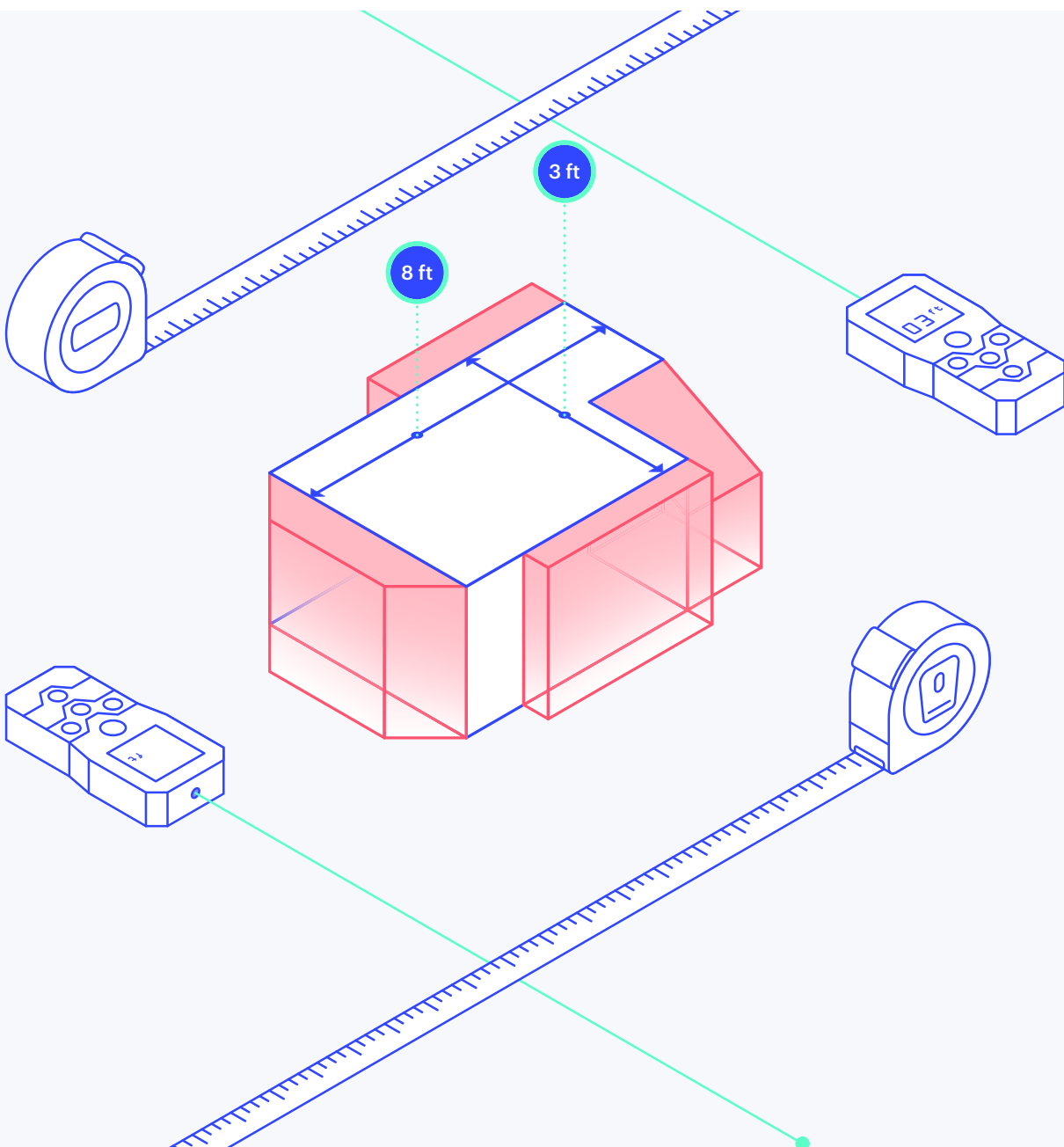
Areas

Calculating area requires both *measurement* (the dimensions and position of all the key architectural features of a room) and *calculation* (applying the correct formulas to derive area from dimensions).

Many non-professionals could calculate the area of a regular, square or rectangular shaped room - simply multiplying the width

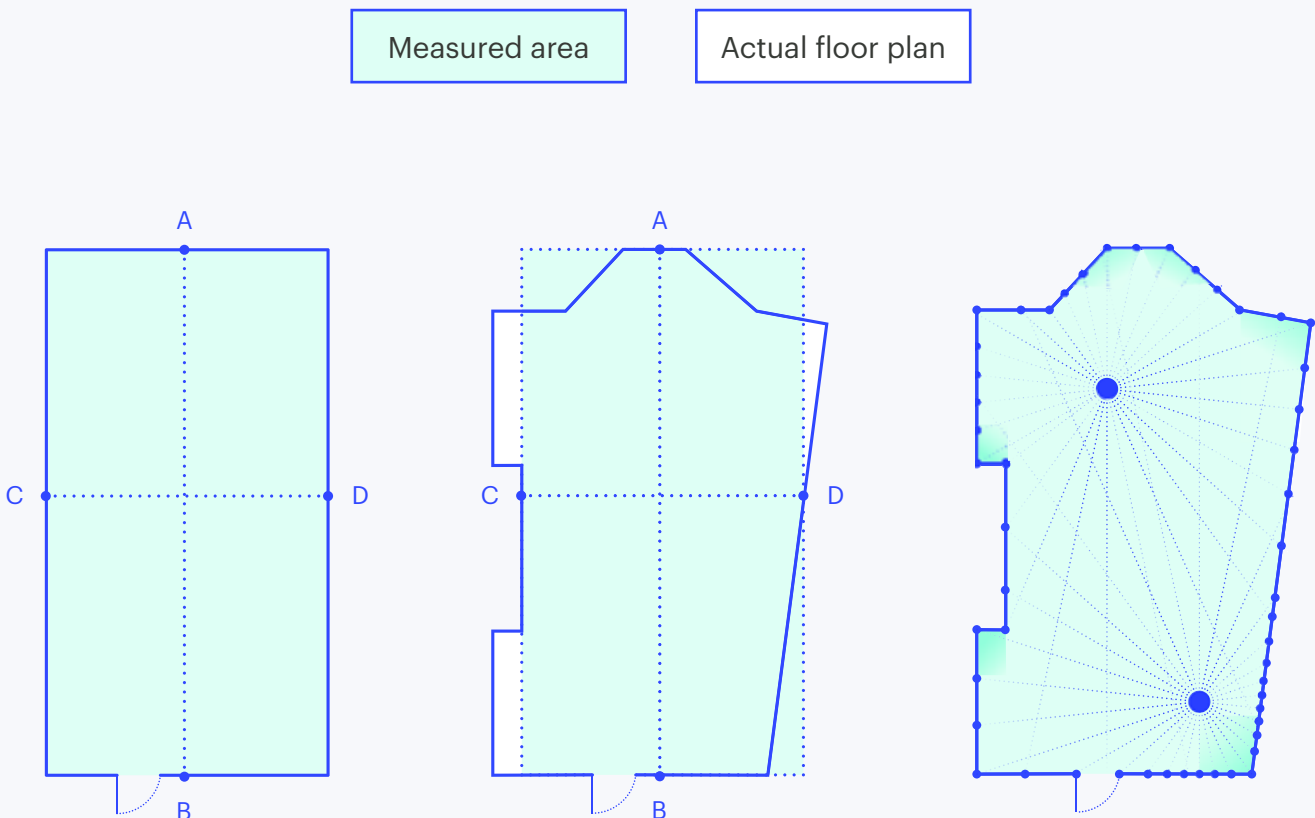
by the length - but calculation of irregular shapes is far more complex.

In a sample of 5,698 rooms analysed by Spec, **only 27% of rooms had regularly shaped, square or rectangle layouts** so the capability to correctly apply the necessary geometric or trigonometric formulas is critical.



Risks of area mismeasurement:

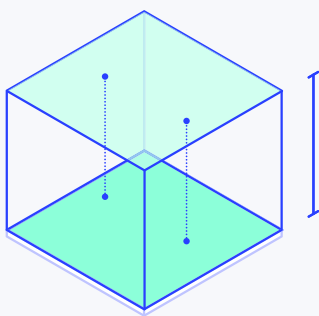
- Manual calculations - using humans to calculate areas always contains risk of human error, either in selection of appropriate calculations, or through errors in transcribing or aggregating the right figures
- Insufficient dimensions to correctly calculate area - **taking only a couple of dimensions and measuring only a few points is not fit for purpose and fails when 73% of rooms are irregularly shaped**
- Complex real world rooms are not simple to measure accurately as they contain varying geometry, obstructions, irregular angles and invisible to the naked eye variations in surface depth
- Systematic small errors and using 'average sizes' of walls and rooms measured simply, quickly adds up over a whole property to potentially significant overall variations from reality



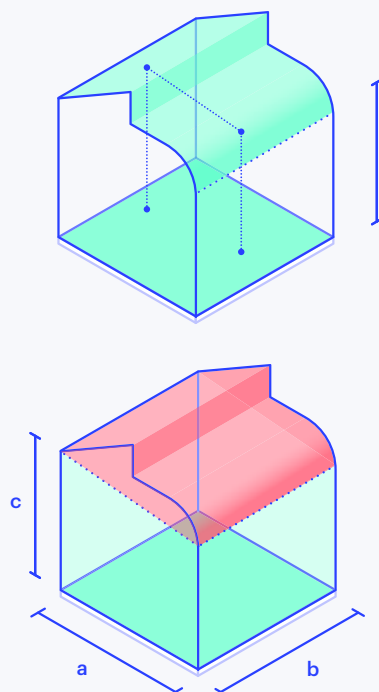
Volume

The final third dimension - height - adds another level of complexity as accurate positional measurements in three dimensions are now required. Again, calculating volume is simple where the shapes are regular, but factor in angled ceilings, step heights, skylights, recessed and varying floor heights and it becomes impossible to calculate a space accurately without comprehensive scans at millimetre precision that provide full coverage of the space.

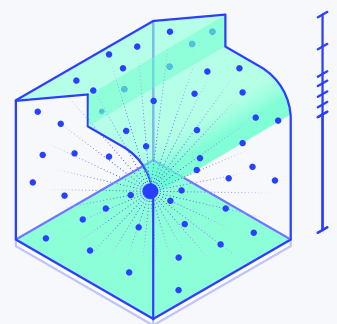
Simple height measurements



Irregular ceiling height measured with a single vertical data point of measurement



Accurate volumetric measurements



Standards in measurement

Given that measurement matters and can have significant consequences if performed poorly, how can property professionals ensure that the figures they must rely on are consistent and trustworthy?



International standards

The Royal Institution of Chartered Surveyors (RICS) has been the creator and arbiter of professional standards in property now for over 150 years¹¹. They are the preeminent global body defining and regulating standards in property measurement, surveying and valuation.

RICS has been instrumental in developing, and has adopted the International Property Measurement Standard (IPMS). IPMS is an internationally recognised standard¹², developed and adopted by RICS for consistent, reliable and accurate measurement of property size globally.

From the 1st May 2018, RICS has mandated that IPMS should be used as the default standard by regulated firms and surveyors to report measurement of properties.

If IPMS is not applied (because in some circumstances it is not suitable) the reasons for departure must be documented.

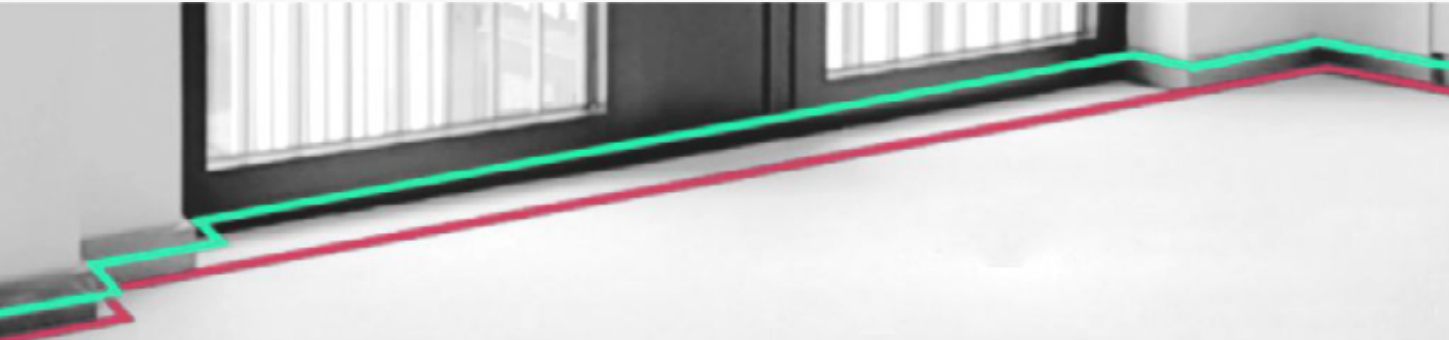
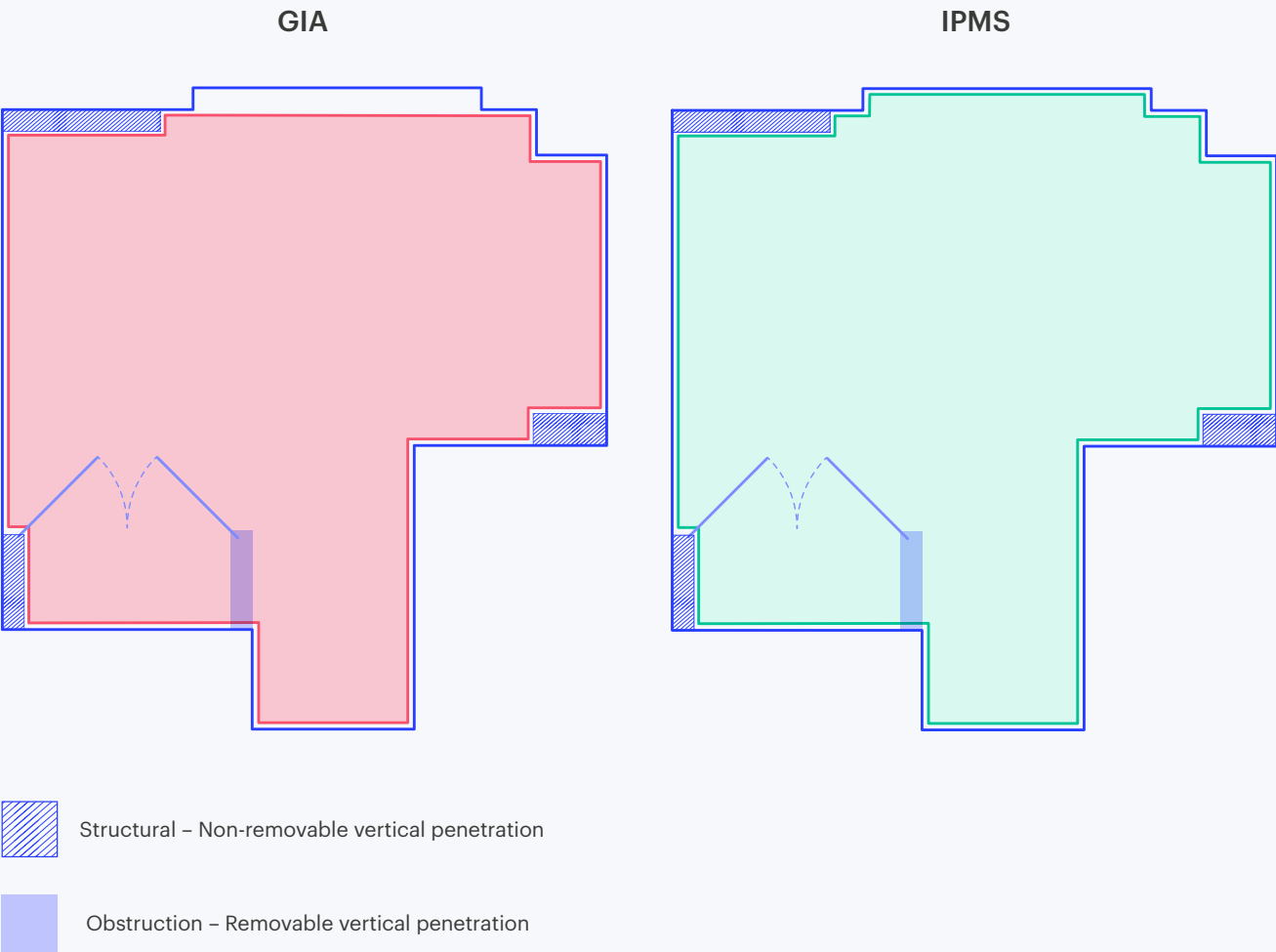
Following RICS guidelines is required for any property professional and RICS regulated firm (many of whom are estate agents) needing to demonstrate best practice in property measurement.

In many cases, IPMS standard measurements, particularly when combined with comprehensive measurement points, may return slightly larger areas than the previous standard due to improvements in the way the Internal Dominant Face is calculated.

As RICS are seen as the trusted professional body for property standards, any floor plans presented that do not adhere to their rigorous standards become a liability in the event of disputes.

Demonstrating that the plans and measurements of marketed properties have been produced according to the recognised industry standard in best practice, provides a powerful defence against any dispute and substantially mitigates risk.





-  Old extent
-  IPMS extent



Misapplication of standards

The current standard in place is RICS Property Measurement 2nd Edition January 2018, which any professionally measured area should adhere to. It's a comprehensive 70 page document containing detailed definitions and practice guidelines

Given the level of professional knowledge required and detailed standards interpretation it's unsurprising that most online floor plan services and offshore production services struggle to adhere and frequently fail to correctly calculate areas.

Closely reading the smallprint on such plans often reveals quite how untrustworthy the figures are, frequently referencing plans as:

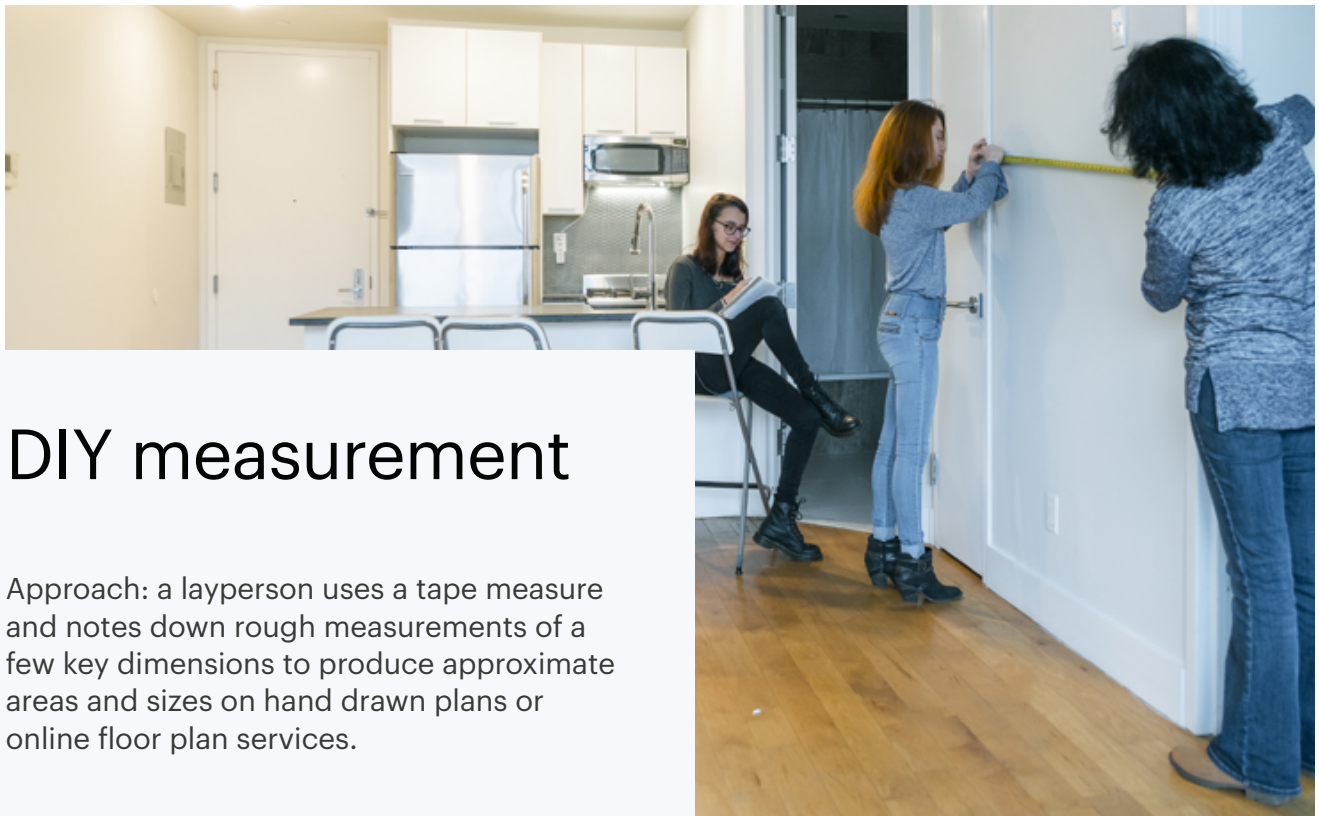
- *"Not to scale, Illustration only"*
- *"Approximate area"*
- *"Cannot be regarded as representative"*
- *"Not to be used in transactions"*
- *"Must not be relied upon as a statement of fact"*
- *"No responsibility taken for any error, omission or misstatement"*
- *"The measurements indicated are supplied for guidance only and as such must be considered incorrect."*

Limitations of current practice

What options are available to property professionals to create the numbers they need to rely on without compromising their business?

Producing measurements and floor plans for property can be achieved in three broad categories; DIY, semi-professional or surveyed.





DIY measurement

Approach: a layperson uses a tape measure and notes down rough measurements of a few key dimensions to produce approximate areas and sizes on hand drawn plans or online floor plan services.

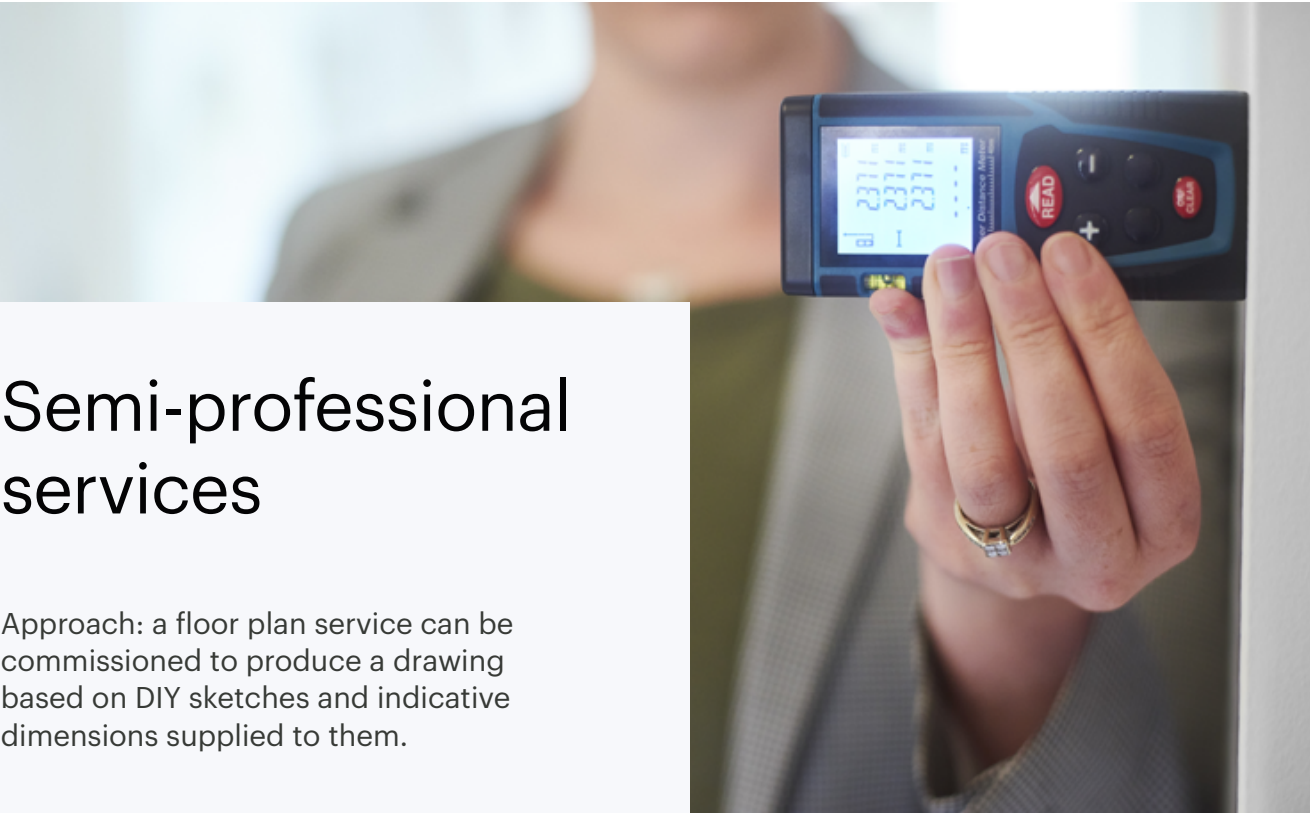
Benefits:

- Cheap
- Fast

Costs/Risks:

- Online floor plan services have varying capability and accuracy e.g. some cannot draw curves, most assume standardised wall thicknesses or icons for features such as sink, hobs, baths, doors and windows
- Selecting measurement points by eye is hugely inaccurate and unrepresentative e.g. if you pick the wrong position to measure from
- No professional standards are used
- Manual calculations required with potential for human error
- High liability

Note: some apps exist that can generate floor plans automatically, but they have limited accuracy and capability to cope with irregular properties and use uncalibrated mobile phone or tablet cameras rather than accurate laser measurements.

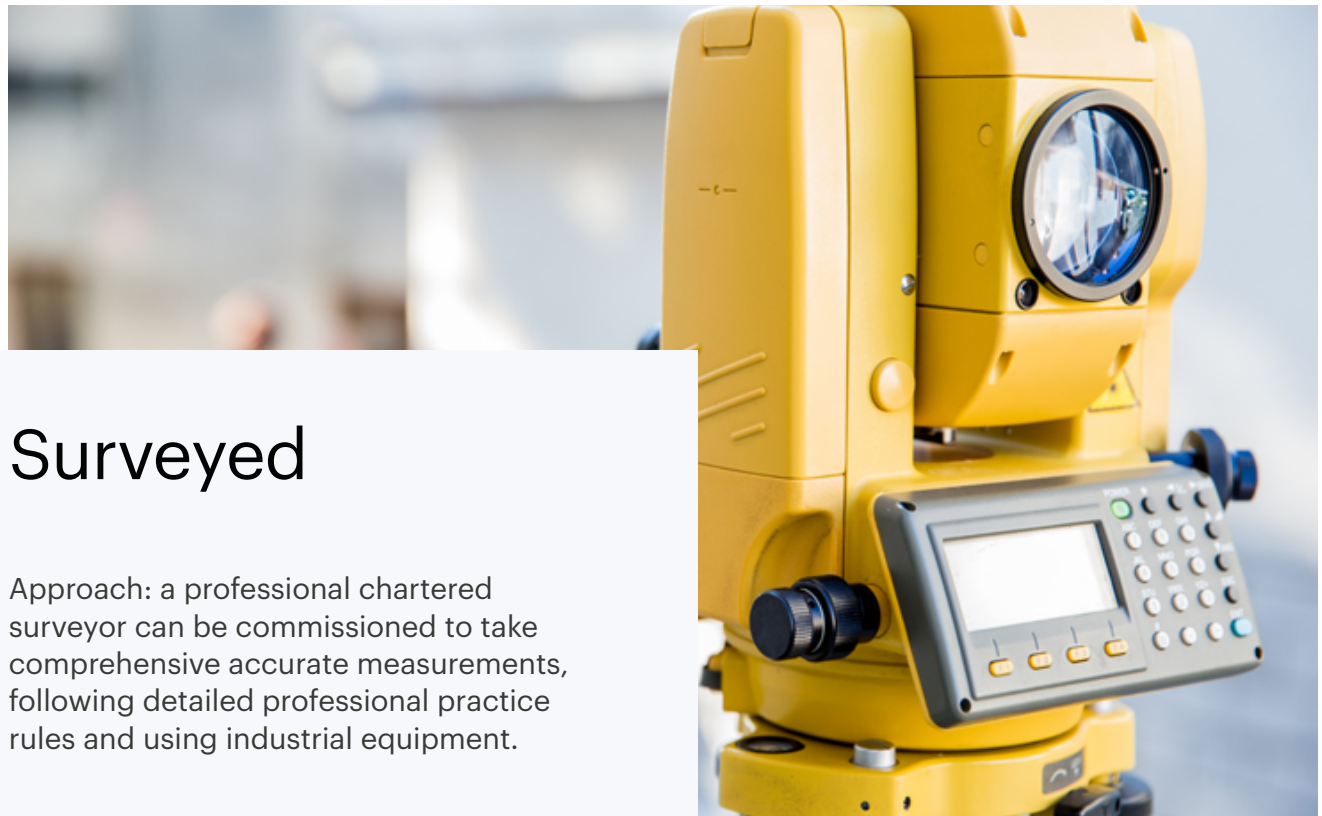


Semi-professional services

Approach: a floor plan service can be commissioned to produce a drawing based on DIY sketches and indicative dimensions supplied to them.

Benefits:	Costs/Risks:
• Cheap to mid-price • Someone else does the work	• These services often use remote, out-sourced or off-shore production teams who won't have been inside the property at any stage to convert sketches and notes into plans and calculate areas • Often ignores height • Non-compliant standards used, if at all • No liability accepted, plans are "for illustration only, not to be relied upon" • Data custody is broken between the original on-site measurer and plan production teams • Similar to the DIY approach, they commonly suffer from using only 3 or 4 points of measurement per room, typically taken by someone who is not a professional or certified surveyor or measurer, and usually someone whose primary role is to take photographs.

Note: many less reputable or established floor plan services are effectively DIY operations behind the scenes with all the equivalent issues and risks.



Surveyed

Approach: a professional chartered surveyor can be commissioned to take comprehensive accurate measurements, following detailed professional practice rules and using industrial equipment.

Benefits:

- Professional measurement
- Industrial equipment (typically laser measurement systems)
- Standardised process that applies professional standards
- Insured results with professional indemnity liability included
- Data chain of custody is sustained within one source

Costs/Risks:

- Can be a long lead time to book a survey and then can take days to produce a final result
- Requires industrial equipment
- Very expensive

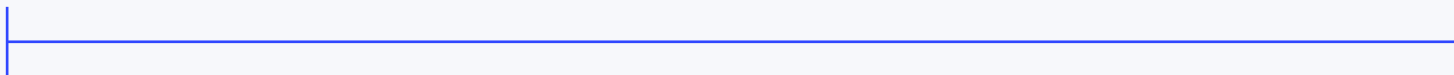
Note: industrial grade building surveys typically require long lead times to book and come with additional processing time and cost overheads.

Quantifying mismeasurement: research methodology

To better evaluate the challenges and quantify the risks property professionals consumers and estate agents face from inaccurate plans, the Spec research team carried out an intensive research study - we believe the largest such to date.

The study compared the traditional measurements and plans used by estate agents of 304 properties in London with accurate laser scanned Spec plans for the same properties.

The properties were effectively a random sample selected by virtue of a) being unprompted commissions for a capture by Spec customers and b) having existing, floor plans available for comparison.





Source of truth

Spec produces measurements in accordance with RICS international standards and their captures are carried out by RICS Certified Property Measurers, using industrial grade, Leica BLK laser scanners.

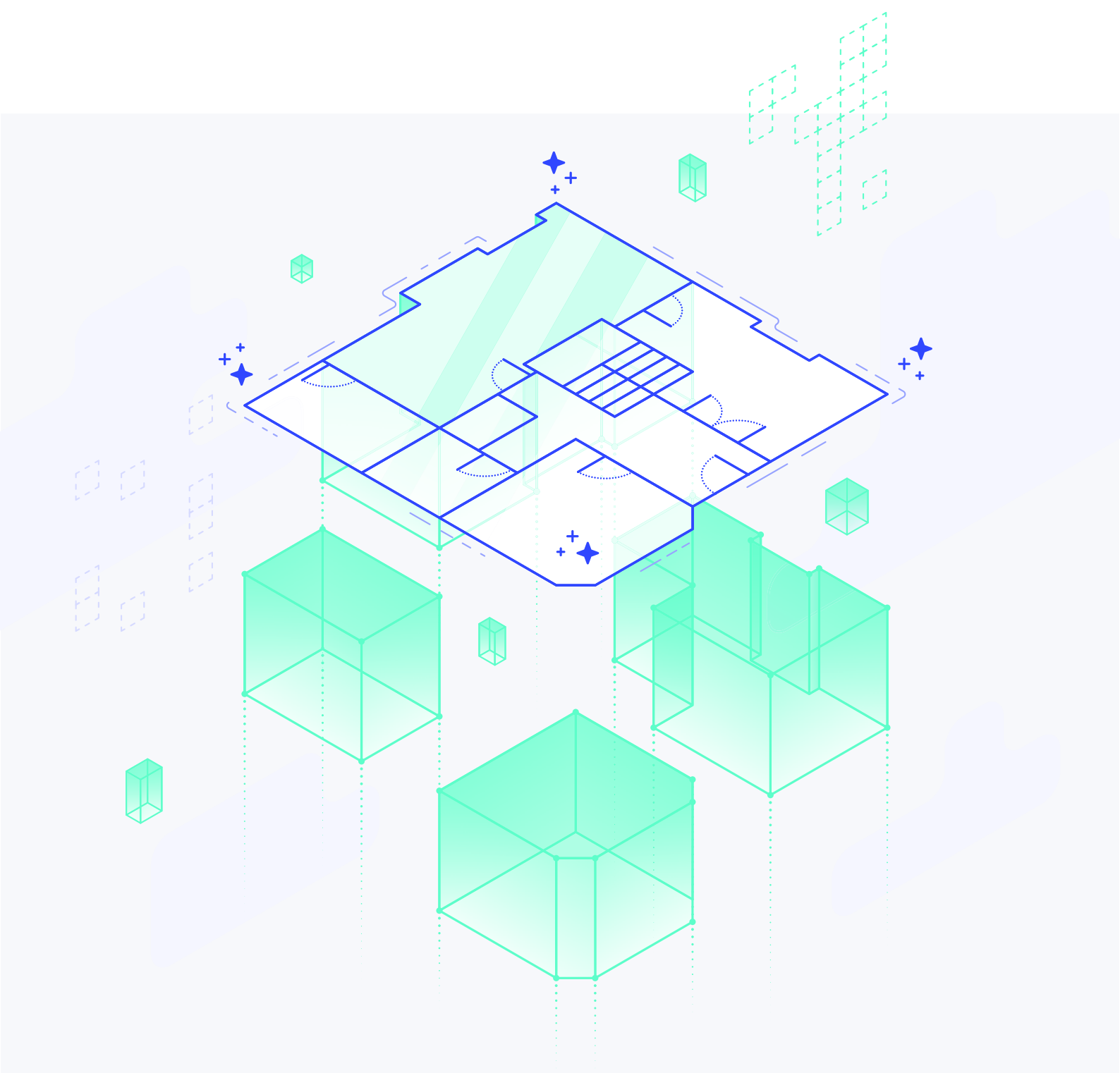
A Spec capture results in millions of measurement points per property, capturing the entire volumetric space in full 360.

The Leica system is accurate to +/- 6mm at 10m indicating Spec's raw measurements are within 99.9% of reality. The average room size across a sample of 1,590 rooms scanned by Spec is 4.4m X 2.9m so comfortably within Leica's stated range for millimetre accuracy.

Spec process those millions of measurement points in their proprietary cloud software platform using algorithms that robotically and precisely apply RICS measurement standards. Outputs are then cross checked and verified by humans before publication and the entire

process is regularly checked and audited by chartered professional surveyors.

Spec's process therefore produces a consistent, rigorous and highly accurate 'source of truth' for the physical dimensions of a property.



Basis of measurement

A professional plan should include the basis of measurement with any figure so that any interested party can properly evaluate what is being measured and included or excluded in the figures and reliably compare similar properties.

Spec produces RICS compliant measurements utilising the most up to date RICS Property Measurement 2nd Edition, January 2018. This standard replaces the previous 'Code of Measuring Practice' and

has been in effect since 1st May 2018 for all chartered surveyors and RICS regulated firms, many of which are estate agents.

Where area was not reported using a defined standard such as the Gross Internal Area (GIA) from the (outdated) RICS Code of Measuring Practice, we assumed that a reasonable consumer would expect whatever figure was reported to be the total area contained by the exterior walls and hence approximate to gross internal area.



Comparing areas and plans

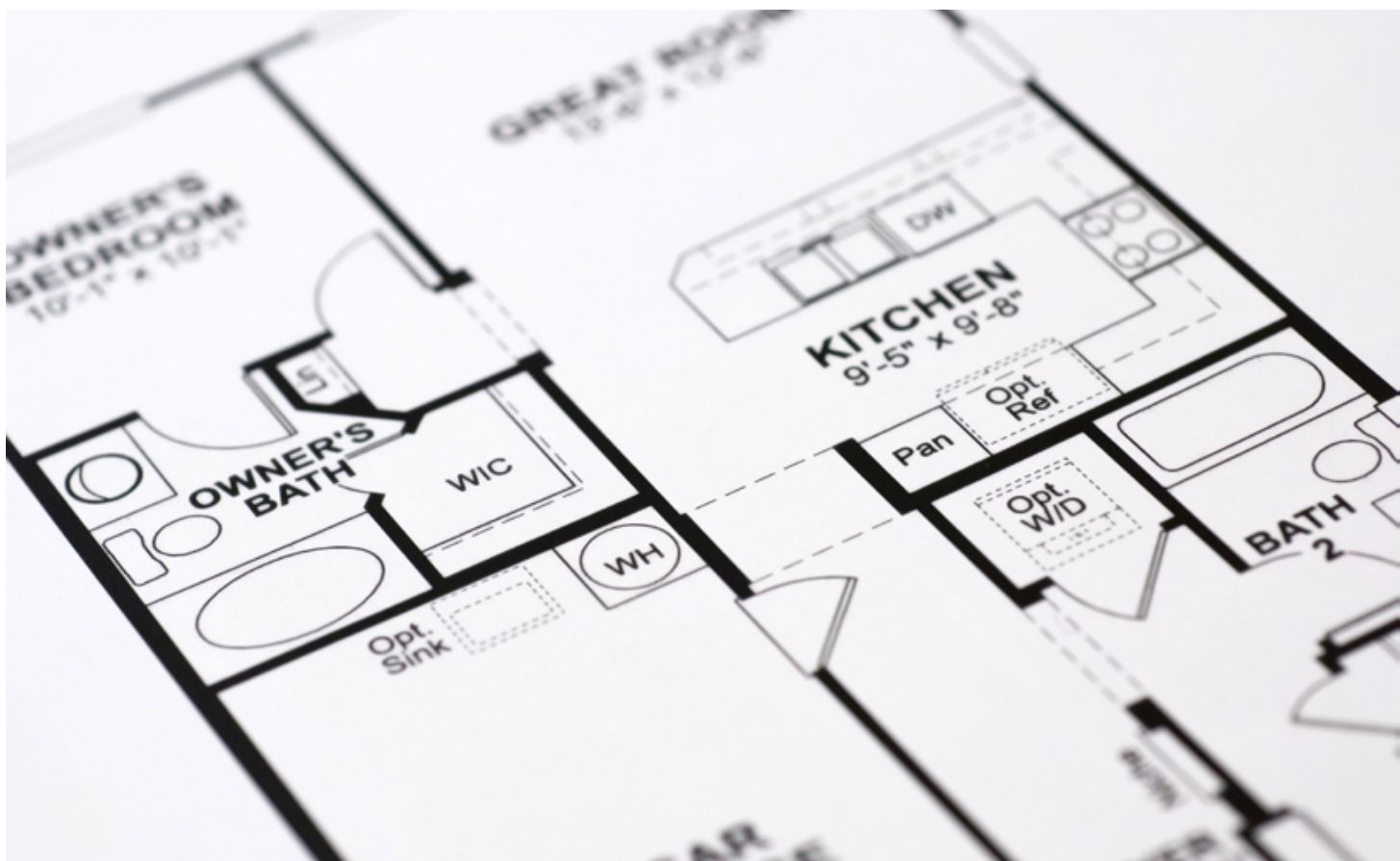
Comparison floor plans were sourced from current and previous marketing material for the same property, available publicly through online portals, estate agents' own websites, house builders' brochures and online research.

Once a comparison floor plan was found it was checked and verified as a match for the property and key data points were noted:

- The reported area for the property (in Square Feet)
- The basis of measurement
- The plan provider

The variance between the area measured by Spec and the area reported by the comparison plan was then computed. Two levels of variance test were conducted to reflect how few plan providers reflect current RICS best practice in reporting:

1. Level 1 - Basic Accuracy: An 'equivalent to GIA' measure allowing less standards compliant floor plans to be compared fairly. Spec are able to compute multiple standards because they capture such comprehensive raw data.
2. Level 2 - Standards & Accuracy: A 'strict', current RICS standards compliance measure using IPMS 3B. This is the value that should be reported for the most current standards accuracy.



Sample considerations

Although we believe this is the largest sample analysed to date, a number of inherent areas for bias exist which would benefit from further research and additional validation.

Supplier bias

It is possible that results could be distorted if the sample comparables were over-weighted to a particular traditional floor plan provider with systemic flaws in their process or wider range of accuracy tolerance.

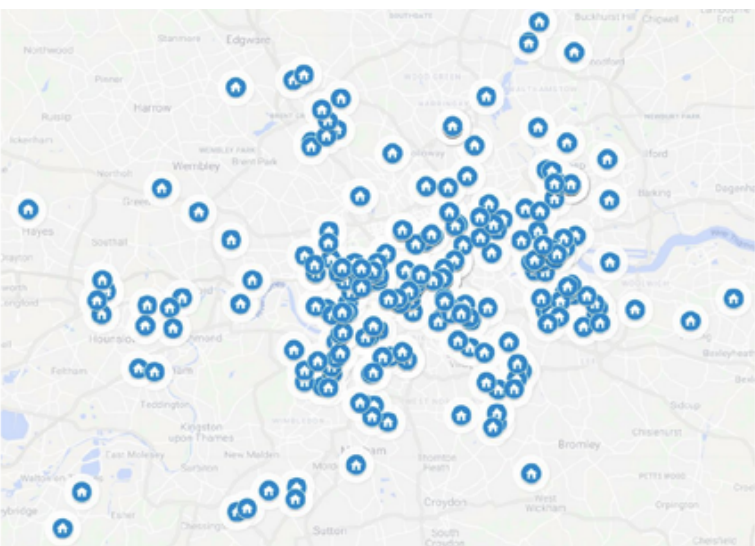
This study however contained floor plans from a total of 31 separate floor plan sources. The largest single source (40%) was a collection of 'unknown' source plans i.e. no details of the floor plan provider were given and the largest single mainstream floor plan provider comprised only 6% of plans compared. There may be sufficient variation in the sample therefore to absorb supplier bias.

Property type bias

Some types of property might be predisposed to mismeasurement or significant error. Older properties might contain more irregular rooms for example and larger properties and dwellings over multiple floors may have more opportunity for error through sheer size and complexity. This study analysed 197 flats and 107 houses so we consider this unlikely given the slight weight toward modern flats, but more research is required to explore mismeasurement in larger detached or semi-detached properties.

Geographic bias

It's possible that properties in certain areas are more susceptible to mismeasurement, but the spread of comparables in this sample across inner London covered a mix of locations, neighbourhood and styles.



Results

The study revealed that it's not really a case of if your property is measured inaccurately, but how much it is measured inaccurately and therefore how much the valuation could be out.

For reference, the average residential London property is 860 Sq Ft (the UK average is 1,100 Sq Ft) and variances over 5% could likely be viewed as significant in legal disputes, for exceeding a reasonable margin of error.



Highlights

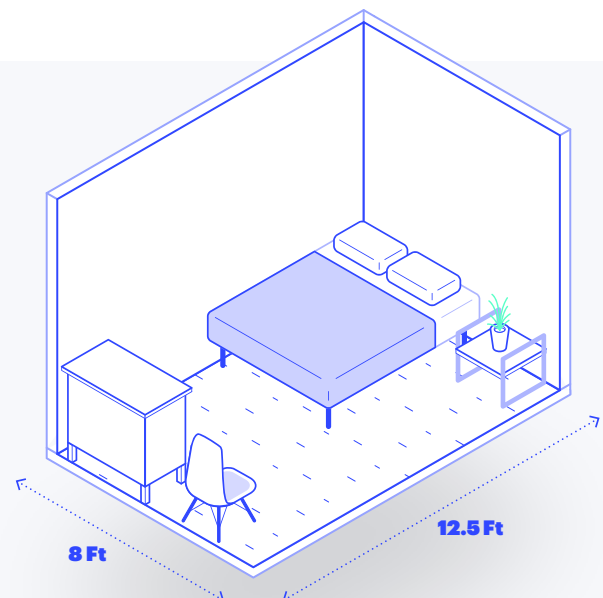
- **1 in 8 properties were out by at least 100 Sq Ft**, rising to 1 in 3 when strict, current standards are applied
- **31% of properties (nearly 1 in 3) were over or under stated by at least 5% of their size.**
- **1 in 11 properties are out by at least 10%**
- The average mismeasurement was around 54 Sq Ft
- The average mismeasurement in flats was around 32 Sq Ft, enough for a small study or storage room
- **The average mismeasurement in houses was 92 Sq Ft, enough for an office or small bedroom**
- **In 60% (nearly 2/3rds) of cases, floor plans marketed by agents not using Spec, over-stated the size**



The average mismeasurement in houses was

92 sqft

enough for a small bedroom.



100 sqft is about the size of a typical second bedroom

The problem is particularly acute in houses where one of the largest examples of mismeasurement we found was 555 Sq Ft under-statement, largely missing usable eaves storage, representing a 33% understatement of size.

Accuracy of calculation alone was a factor in 47% of cases examined but misapplication of standards was a factor in nearly half the cases where mismeasurement exceeded 10% of the true size.

In further papers we will report more extensively on mismeasurement deriving from lack of compliance to current standards.



Impacts on valuation

Price per square foot is the key benchmark for comparing value of property, all other things being equal. Small changes in area can have far reaching impacts on the valuation.

As mismeasurement can be over-stated (60% of cases) or under-stated (40% of cases), buyers and renters could be over-paying and vendors or landlords could be under-valuing their properties.

- Value of average mismeasurement in London is £33,800
- Value of 100 Sq Ft mismeasurement (1 in 10 properties) is £62,593

The following tables illustrate the mismeasurement differences we found in terms of price per square foot impact.

Table 1:
Average Price per Sq Ft impacts of mismeasurement

Averages	London	UK
Property size	860 Sq Ft	1,100 Sq Ft
Price ¹³	£538,303	£266,649
Price Per Sq Ft	£626	£242
Value of average 54 Sq Ft mismeasurement	£33,800	£13,090
Value of 100 Sq Ft mismeasurement (1 in 10 properties)	£62,593	£24,241

e.g. A 100 Sq Ft mismeasurement is worth £62,593 in London.

Table 2:
Value of average absolute (i.e. ignoring whether under or over-stated)
and maximum differences we found

	Average absolute Difference		Maximum absolute difference	
	London	UK	London	UK
Houses	£57,697	£22,344	£347,505	£134,580
Flats	£20,039	£7,760	£167,027	£64,685
All types	£33,497	£12,972	£347,505	£134,580

e.g. the average London house is mis-measured by nearly £60,000.
The largest example of mismeasurement we found could have changed
the value of the property by nearly £350,000.

Table 3:
Value of over-stated properties

	Over-stated averages		Over-stated maximums	
	London	UK	London	UK
Houses	£58,499	£22,655	£263,060	£101,876
Flats	£20,675	£8,007	£152,960	£59,238
All types	£33,696	£13,050	£263,060	£101,876

e.g. where London houses are over-stated, it's by nearly £60,000.
The largest example of over-stating we found could have changed
the value of the property by £263,000.

Examples

Property	Size as marketed	Spec size	Difference (Sq Ft)	Value of difference (at £626 per Sq Ft)
Case WP-001 4 bed house in SE19	3,229	2,808	-421	£263,546
Case WP-002 7 bed house in W14	4,638	4,334	-304	£190,304
Case WP-003 5 bed house in SW6	2,895	2,603	-292	£182,792
Case WP-004 6 bed house in NW4	2,099	1,890	-209	£130,834
Case WP-005 4 bed house in E10	1,546	1,369	-177	£110,802
Case WP-006 3 bed house in TW7	1,015	859	-156	£67,656
Case WP-007 2 bed flat in SW11	1,088	969	-119	£74,494
Case WP-008 4 bed house in SE22	1,455	1,684	+229	£143,354
Case WP-009 1 bed flat in SE1	575	841	+266	£166,516
Case WP-010 5 bed house in DA17	1,179	1,621	+442	£276,692

Effects on mortgage payments

Over a 25 year typical mortgage, that £34,000 average mismeasurement would translate to nearly another £50,000 in monthly payments and interest.

	Price paid	Mortgage amount	Monthly initial payment	Payment after fixed period	Total interest paid	Total to repay
Over-stated size price	£600,000	£540,000	£2,360	£2,872	£307,475	£849,220
Accurate size price	£566,000	£509,400	£2,226	£2,709	£290,051	£801,196
Savings	£34,000	£30,600	-£134 per month	-£163 per month	£17,424	£48,024

Figures from Moneysupermarket.com 31/01/2019, based on a 25 year capital and interest mortgage from Halifax on a 2 year fixed rate deal 2.27% then 4.24% thereafter. Includes £1,695 of fees.



Application of standards

In less than half of cases (47%), the reported area used a recognised measurement standard - Gross Internal Area, but 30% of cases gave no basis of measurement at all making it almost impossible for a consumer to be confident of the standards used to calculate the area. This is a major challenge to the industry, keen to build reputation for trust.

When a selection of case studies were analysed, we found that **even where properties were reported as using GIA, it was common to find errors**

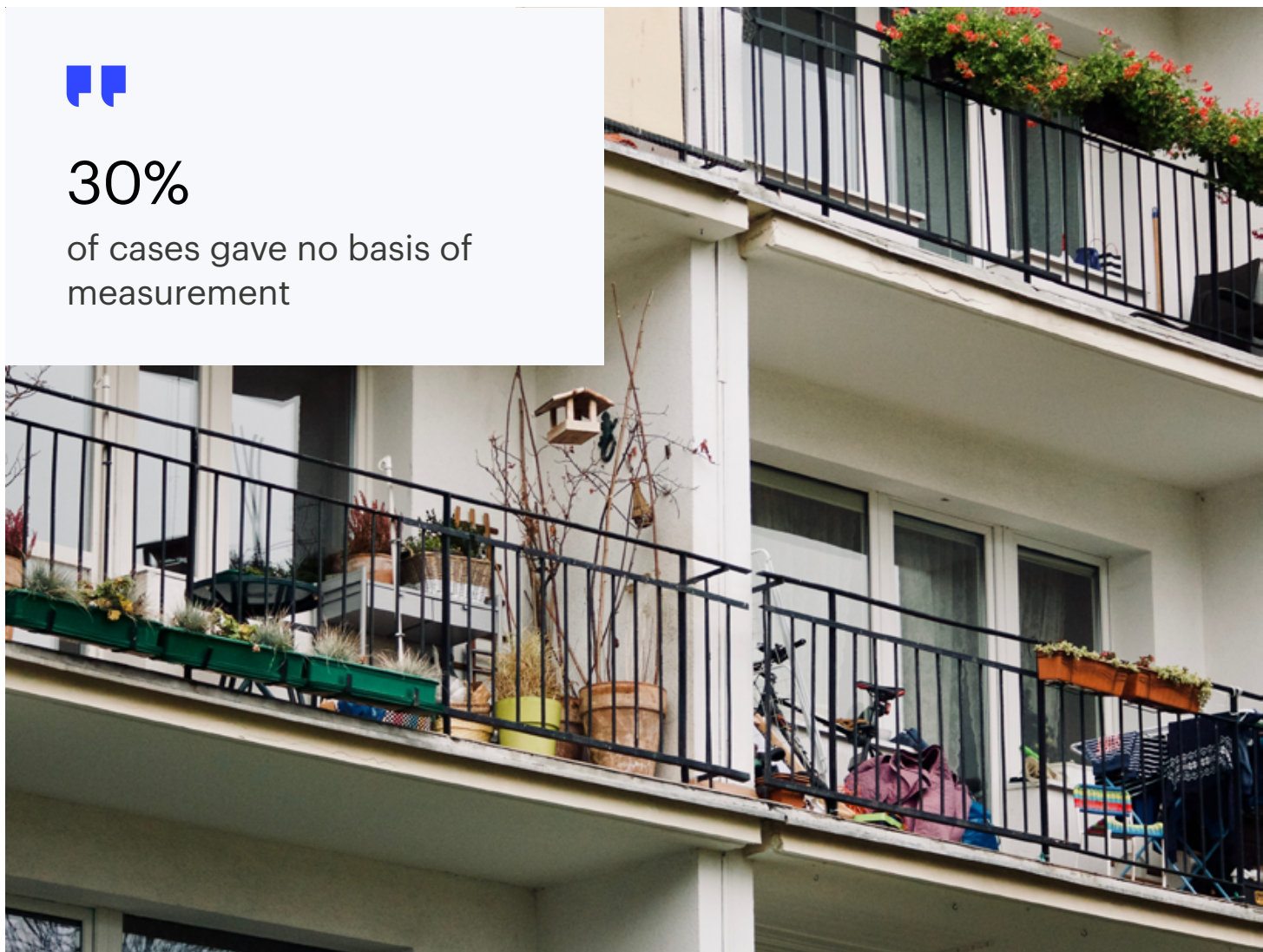
in the application of the standard, including or omitting areas that shouldn't strictly be considered.

This was common in London flats featuring balconies or terraces where we found some of the largest discrepancies. Poor or inconsistent application of standards is a significant liability risk, indicating that many providers lack sufficiently rigorous operating procedures, expert oversight or simple base knowledge of how to accurately report sizes to recognised standards.



30%

of cases gave no basis of measurement



Recommendations for agents

This study indicates that 1 in 8 properties put on the market could be a legal liability to the agents marketing them if their floor plan supplier is not able to match Spec's capabilities to accurately measure and calculate property size.



It's therefore clear that property professionals must very carefully consider what services and systems their business is unwittingly using if they want to:

- report accurately and meet their CPR obligations
- avoid creating legal and commercial risk to their business
- apply best practice with confidence
- consistently apply standards
- gain selling points on less compliant and accurate competitors

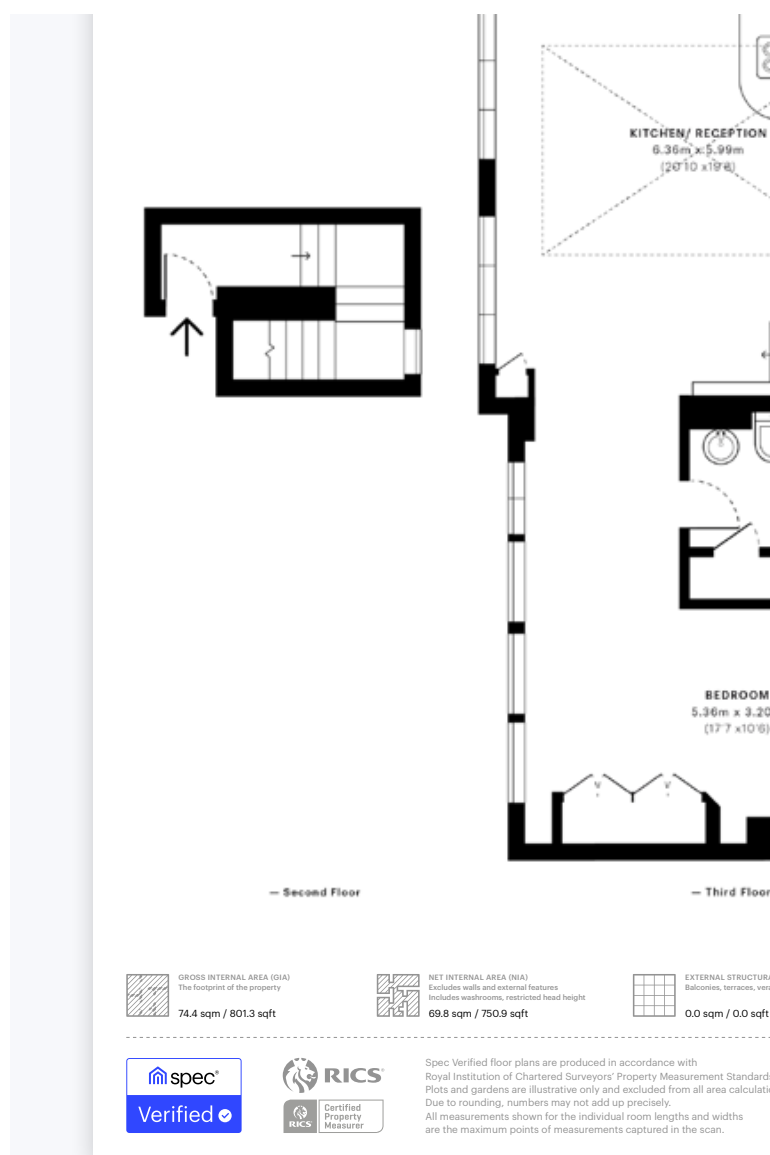
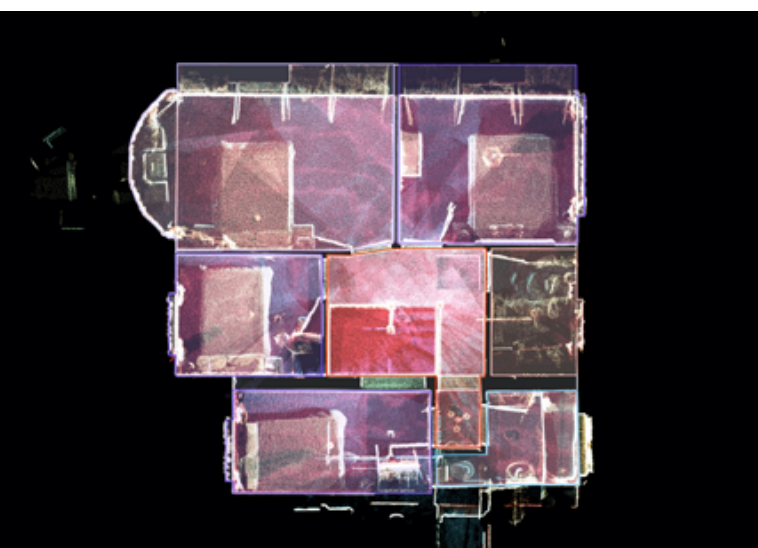
Adopting insured, accurate standards, compliant measurements and floor plans offers a significant competitive edge and material point of difference vs agents still employing old fashioned, hand-held 'approximate' sizes.

Spec measurements for customers are all compliant now with current RICS standards in professional property measurement. The volume of raw measurement points Spec uses is a million times more comprehensive than old fashioned plan suppliers and accurate to within 99.9% of reality. Additionally, Spec's work is backed by global insurance coverage.



Questions to ask your floor plan provider:

- Are your plans RICS compliant?
- How many points of measurement are used in calculating areas?
- How do they measure complicated shapes?
- Are measurements captured by a RICS Certified Measurer or surveyor?
- Are plans and calculated areas produced in-house by the same people that captured the data or are they outsourced to off-shore services?
- Are hand-held or spirit-levelled tripod bases used for measuring?
- What level of professional indemnity insurance do you have in place?



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- 10 <http://www.ricsfirms.com/glossary/margins-of-error/>
- 11 <https://www.rics.org/uk/news-insight/topics-trends/rics-150th-anniversary/>
- 12 The International Property Measurement Standards Coalition <https://ipmsc.org/>
- 13 We use an average between Rightmove's November 2018 House Price Index (<https://www.rightmove.co.uk/news/house-price-index/>) which reports asking prices and Land Registry October 2019 House Price Index (<http://landregistry.data.gov.uk/app/ukhpi>) which reports sold prices



About Spec

At Spec, our purpose is to inspire peace of mind for every sales and rental experience.

We partner with estate agents to deliver feature-rich marketing assets and verified property measurements. By taking transparency to a new level, we're helping agents build trust with their customers.

Our vision is to build the new standard for the residential property industry across the board, and around the world.

Spec represents the future; transparent, principled, prosperous.

To find out more, visit www.spec.co



About Pupil

Spec is a product of Pupil and is powered by Pupil technology. Pupil is a real estate AI measurement company. We capture and publish 3D information about real-world interiors. And we do it on an industrial scale.

Pupil's purpose is to empower people with better data about real-world interiors. Our spatial technology is digitising interiors with a level of accuracy and consistency nobody's seen before. We're helping make the world a smarter, safer and more sustainable place.

To find out more, visit www.pupil.co