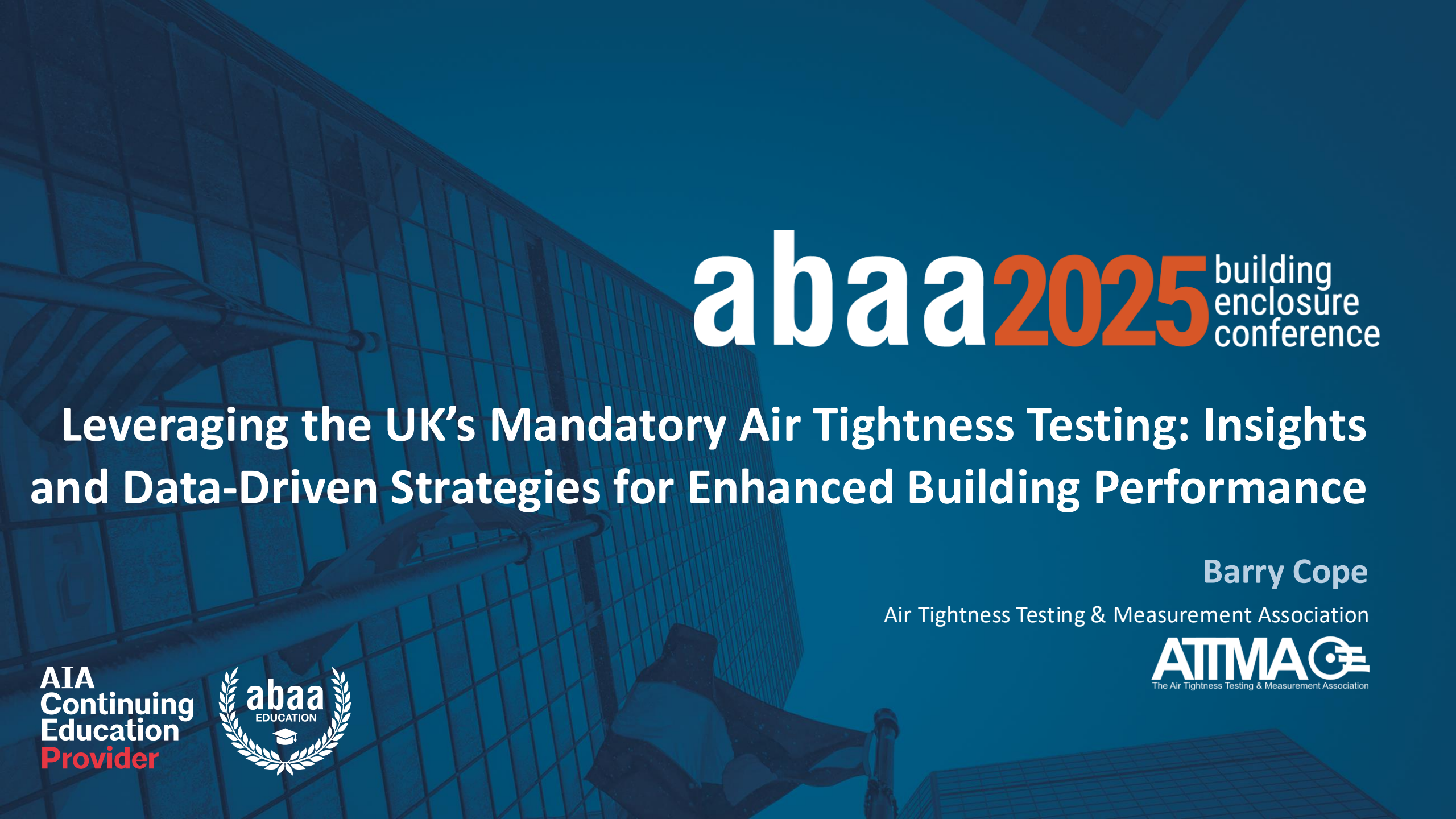

abaa 2025 building enclosure conference

Leveraging the UK's Mandatory Air Tightness Testing: Insights and Data-Driven Strategies for Enhanced Building Performance

Barry Cope

Air Tightness Testing & Measurement Association

ATTMA The Air Tightness Testing & Measurement Association

AIA Continuing Education Provider

abaa EDUCATION

Leveraging the UK's Mandatory Air Tightness Testing: Insights and Data-Driven Strategies for Enhanced Building Performance

Barry Cope

Group Managing Director of the BCTA Group, which encompasses the Air Tightness Testing & Measurement Association (ATTMA).

Learning Objectives

1. Understand the structure and benefits of the UK's mandatory air tightness testing framework, including regulatory consistency and accountability.
2. Explore how ATTMA's lodgement system leverages extensive data collection to drive regulatory improvements and enhance building performance.

Leveraging the UK's Mandatory Air Tightness Testing

The United Kingdom has established itself as a global leader in mandatory air tightness testing, with a robust framework that integrates well-defined regulations, consistent standards, and a comprehensive approach to energy efficiency.

At the heart of this framework is the Air Tightness Testing & Measurement Association (ATTMA), whose Lodgement system has captured over 1.6 million records and amassed more than 1 billion data points. This data has proven invaluable in influencing government policy, driving regulatory improvements, and setting new benchmarks in building performance.

Learning Objectives

3. Identify the critical role that training, certification, and clear regulatory guidelines play in achieving reliable air tightness testing outcomes.

4. Evaluate how insights from the UK's data-driven approach can inform international practices to improve global energy efficiency and building standards.

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Introduction & Background

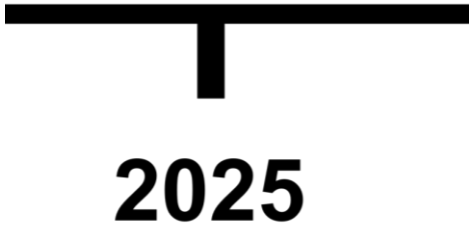
- The United Kingdom of Great Britain & Northern Ireland
- 100% Airtightness Testing
  - Every Building
  - Every House
  - Every Apartment
- 1.6 Million Lodged Results
- 1 Billion Datapoints
- Hyper-realistic training centre

Introduction & Background

- Before we unpack the data, let us discuss how we got here….

Introduction & Background

- Before we unpack the data, let us discuss how we got here….



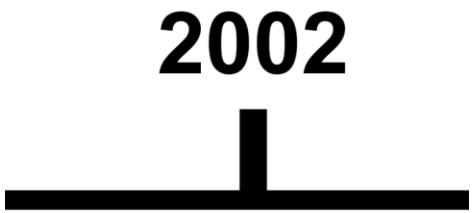
Introduction & Background

- Before we unpack the data, let us discuss how we got here….
- BS EN 13829:2001 released which was a unionisation of many national standards, providing testing standardisation for the first time

2001

Introduction & Background

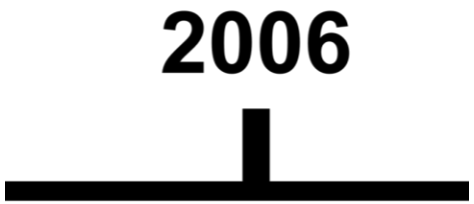
- In 2002, the European Union issued the Energy Performance of Building Directive (EBPD).



The EPBD required all EU members to transition the EBPD into Law by 2006

Introduction & Background

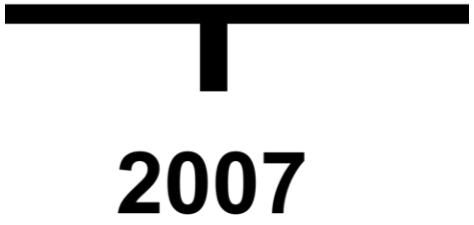
- The UK Adopted the law in 2006, and to appease the new law, used mandatory airtightness testing sampling as one metric to comply



At the same time, ATTMA released its first test standard – ATTMA TS1:2006, as BS EN 13829:2001 was lacking in crucial detail

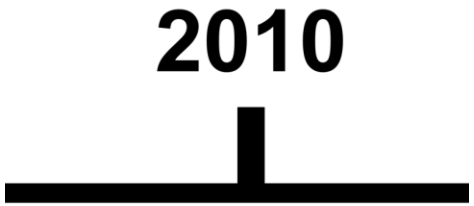
Introduction & Background

- In 2007, the UK introduced Energy Performance Certificates, a crucial publicly listed metric that identified the energy efficiency of each home:



Introduction & Background

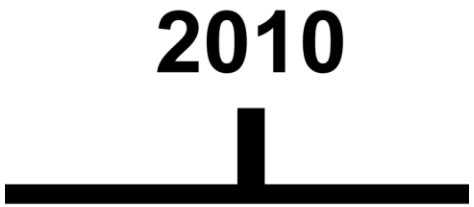
- In 2010, the English, Welsh & Northern Ireland Governments made the airtightness sampling regime a lot more stringent.



Some Building Contractors had figured out that they could focus only on those being tested, without focussing on all plots…

Introduction & Background

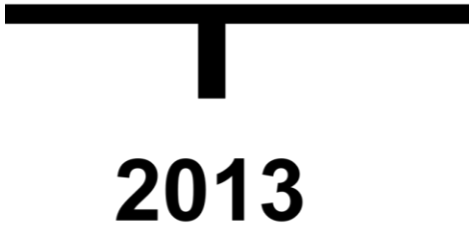
- At the same time, ATTMA withdrew ATTMA TS1 and replaced it with 2 new test standards:



ATTMA TSL1 – Dwellings
ATTMA TSL2 – Non-Dwellings

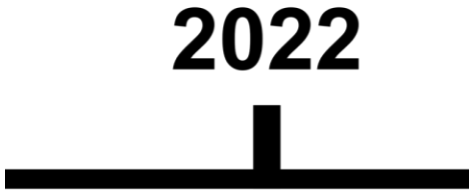
Introduction & Background

- In 2013, a minor update to the standard reduced the air tightness targets



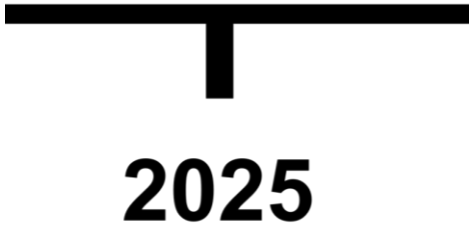
Introduction & Background

- In 2022, The notional building assumptions were amended and tightened, requiring buildings to be more airtight with lower U values and ultimately higher performance.



Introduction & Background

- In 2025, The Future Homes standard will be released, creating some of the most energy efficient homes and buildings in the world, as standard.



Who or what is ATTMA?

- The Air Tightness Testing & Measurement Association
- Responsible for circa 85% of all airtightness testing that happens in the UK (circa 200,000 tests per annum)
- Created the ATTMA Technical Standards, which are listed as the approved testing method in building codes around the world
- Created and maintain the ATTMA Lodgement Database

Who or what is ATTMA?

- Started as 4 member companies in 2002 to promote uniform testing and fair competition
- Grew to 19 member companies (each holding UKAS accreditation) in 2014 before adopting the members of the British Institute of Non-Destructive Testing (BINDT).

ATTMA Lodgement

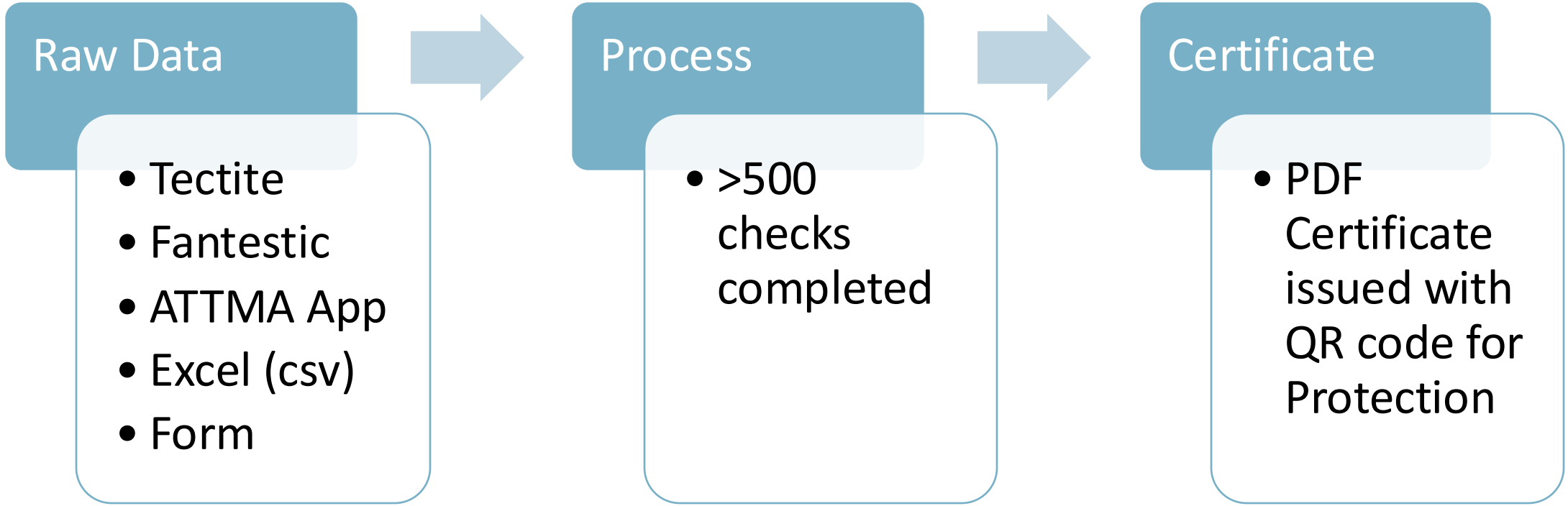
- Created the mandatory Lodgement system in 2015 and started recording minimal data.
- In 2018 we started recording every single piece of data

ATTMA Lodgement

- Created the mandatory Lodgement system in 2015 and started recording minimal data.
- In 2018 we started recording every single piece of data.

What is Lodgement?

- Lodgement is the process of taking raw test data from blower door testing, reviewing and issuing a certificate on completion.



What is Lodgement?

Pre-Lodgement of Air Permeability Test

NOT FOR COMPLIANCE

Not for Compliance

ATTMA The Air Tightness Testing & Measurement Association

UCRN: 11649622

Test Undertaken By	Level 1 Trainee 2 of ATTMA Training - UK

Registered Company Details

ATTMA Training - UK

Address: THIS CERTIFICATE MUST NOT BE USED FOR COMPLIANCE TESTING NO1 ONE

Telephone: 01234

Email: paul@bcta.group

Registered Tester Details

Technician: Level 1 Trainee 2

Registration No: 16204

Qualification: 1 ✓ 2 3 PH EA

For clarification on technician qualifications please visit: https://www.bcta.group/attma/members/

Building Details

Building identifier:	Andys House		
Site address:	4 Gaisborough Avenue, Worthing, West Sussex, BN148QR		
Type:	Dwelling	Description:	House - Semi Detached
Construction:	Traditional	Warm roof:	No
Size:	Footprint (m²): 54.45	Envelope (m²): 246.12	Volume (m³): - Storey: 2
Ventilation:	System 1 - Background ventilators with intermittent extractors		
Primary heating:	Gas	Air conditioning:	None
Mastic sealing:	None		

Test Details 24/02/2025

Report reference:			
Retest:	No	Build progress:	Existing House
Data acquisition:		Test type:	Whole Building
Temporary sealing:	Tester placed temporary sealing on 1 cooker hood, Tester placed temporary sealing on 1 extractor vent.		

Deviations from Test Standard

Deviations:

Notifications:

Test Results Warning

Target:	Not declared	Air Permeability:
Air Flow Coefficient (C_{50}):	55.351 $m^3.h^{-1}.Pa^{n}$	3.67 $m^3.h^{-1}.m^{-2}$@50Pa
Air Leakage at 50 Pa (Q_{50}):	903.584 $m^3.h^{-1}$	
Air Flow Exponent (n):	0.71	
Coefficient of Determination (r^2):	0.999	

This is to certify that the above name building has been tested by a registered provider in accordance with ATTMA TSL1, subject to the above statements regarding temporary sealing and deviations from these test standards.

This certificate is a short form report. If a full compliant report is required please contact the company that issued the certificate. Enquiries about this certificate should be made to: Scheme Manager, ATTMA, Unit 3, Tannery Road, Loudwater, Buckinghamshire, HP13 7EQ or visit www.bcta.group/attma/ or email admin@bcta.group.

7HBB IN2X2 RAZ2

BCTA

ATTMA is part of the Building Compliance Testers Association (BCTA). The BCTA is a trade association for companies that conduct on-site testing and operate within controlled, audited schemes.

web: www.bcta.group BCTA, Unit 3, Tannery Road, Loudwater, Buckinghamshire, HP13 7EQ Email: admin@bcta.group

Pre-Lodgement of Air Permeability Test

NOT FOR COMPLIANCE

Not for Compliance

ATTMA
The Air Tightness Testing & Measurement Association
UCRN: 11649622

Test Undertaken By	Level 1 Trainee 2 of ATTMA Training - UK

Registered Company Details

ATTMA Training - UK

Address: THIS CERTIFICATE MUST NOT BE USED FOR COMPLIANCE TESTING NO1 ONE

Telephone: 01234

Email: paul@bcta.group

Registered Tester Details

Technician: Level 1 Trainee 2

Registration No: 16204

Qualification:

1	2	3	PH	EA
✓				

For clarification on technician qualifications please visit:
https://www.bcta.group/attma/members/

Building Details

Building identifier: Andys House

Site address: 4 Gaisborough Avenue, Worthing, West Sussex, BN148QR

Type: Dwelling **Description:** House - Semi Detached

Construction: Traditional **Warm roof:** No

Size:	Footprint (m²)	Envelope (m²)	Volume (m³)	Storey

Notifications:	

Test Results

Target:	**Not declared**	
Air Flow Coefficient (C_{env}):	55.351	$m^3.h^{-1}.Pa^n$
Air Leakage at 50 Pa (Q_{50}):	903.584	$m^3.h^{-1}$
Air Flow Exponent (n):	0.71	
Coefficient of Determination (r^2):	0.999	

Air Permeability:

3.67 $m^3.h^{-1}.m^{-2}@50Pa$

Warning

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7HBB-W2X2-RAZ2

BCTA

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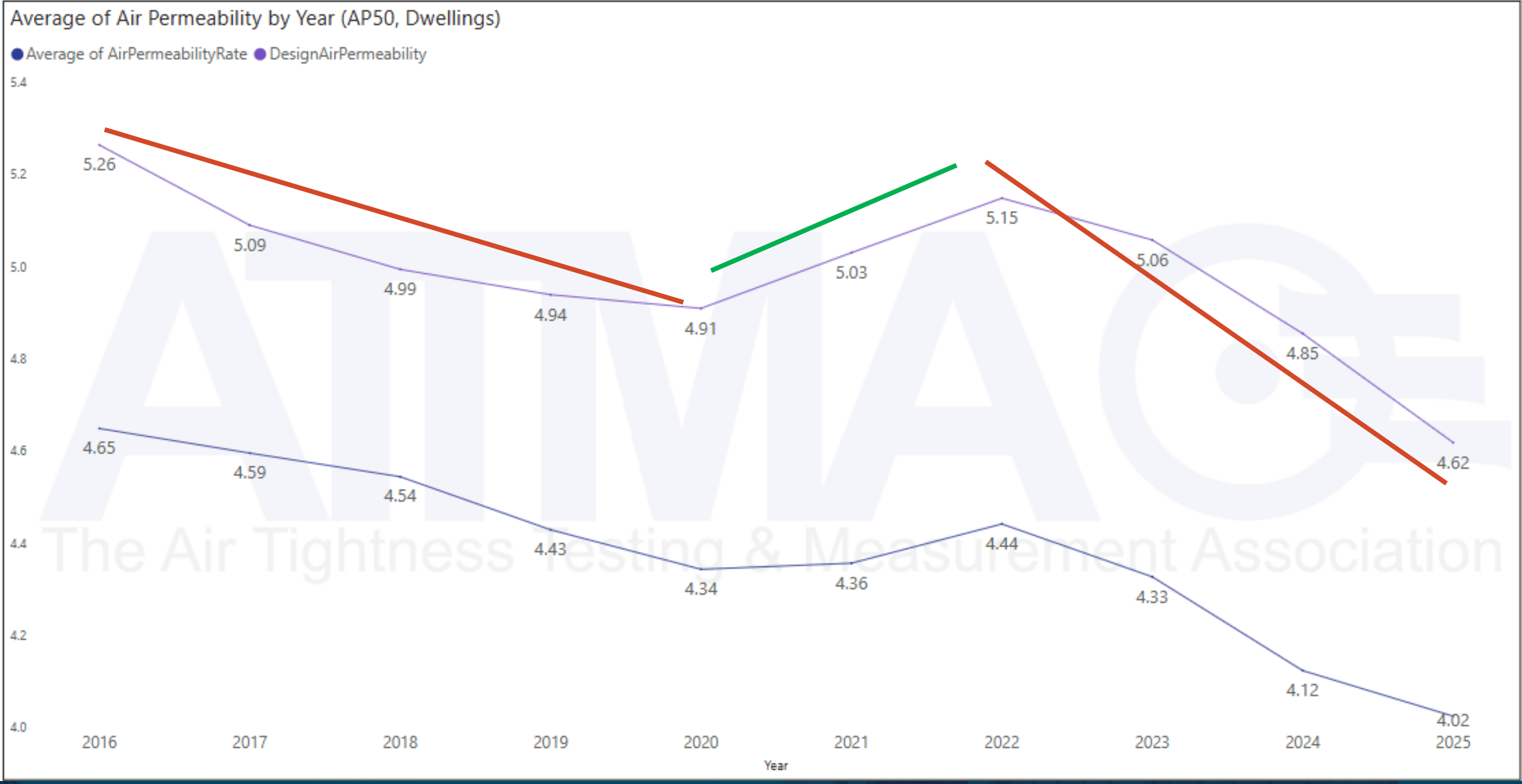
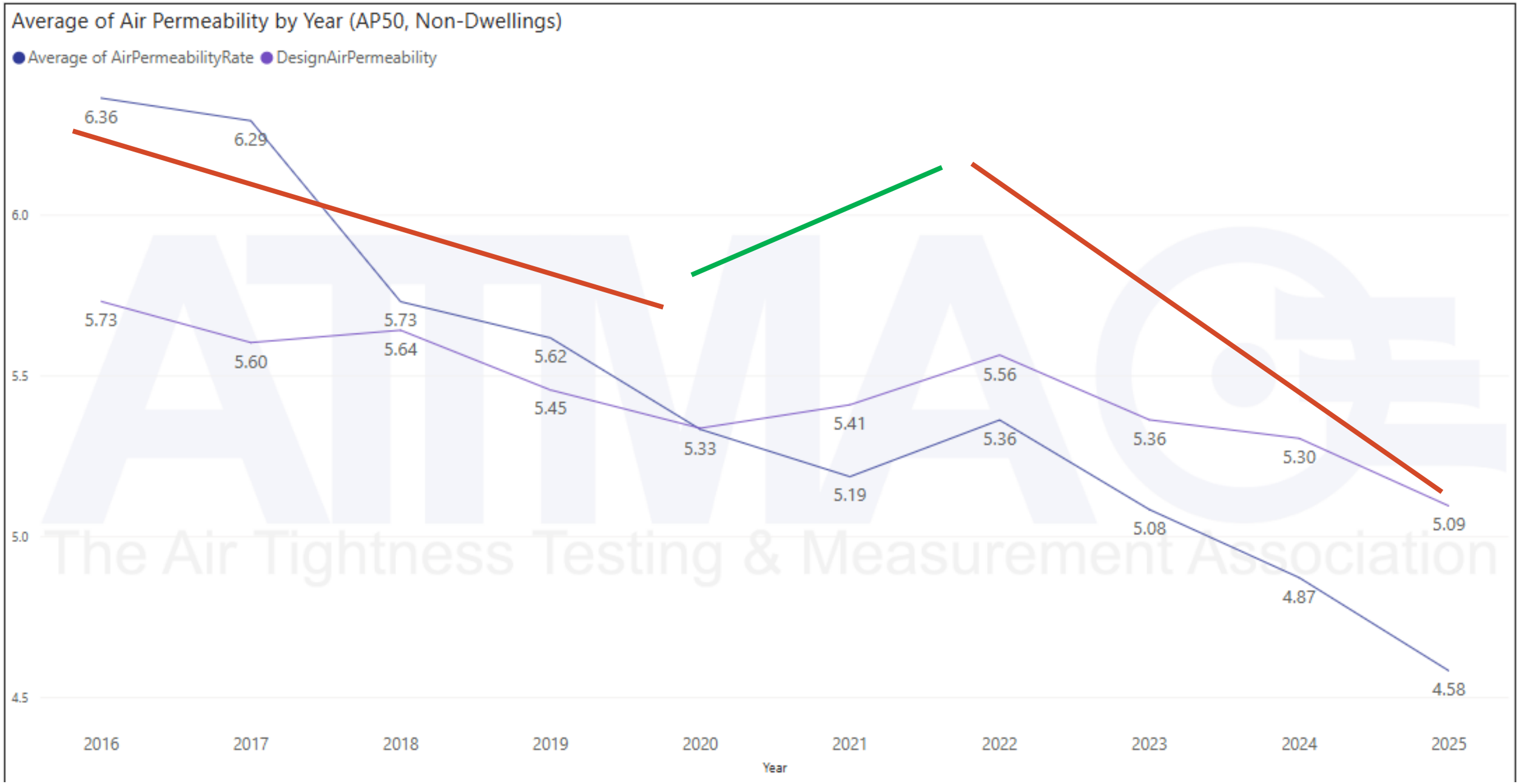
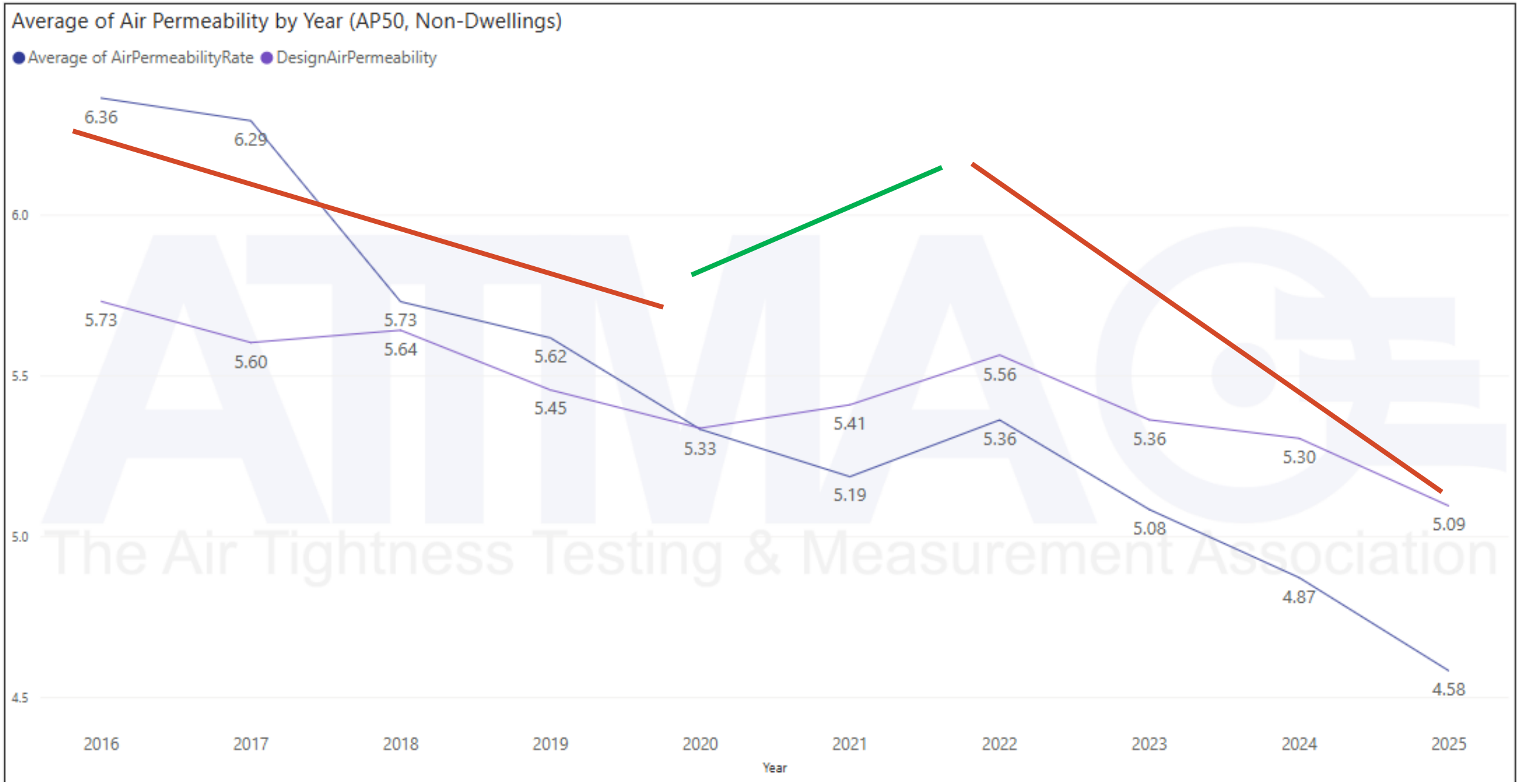
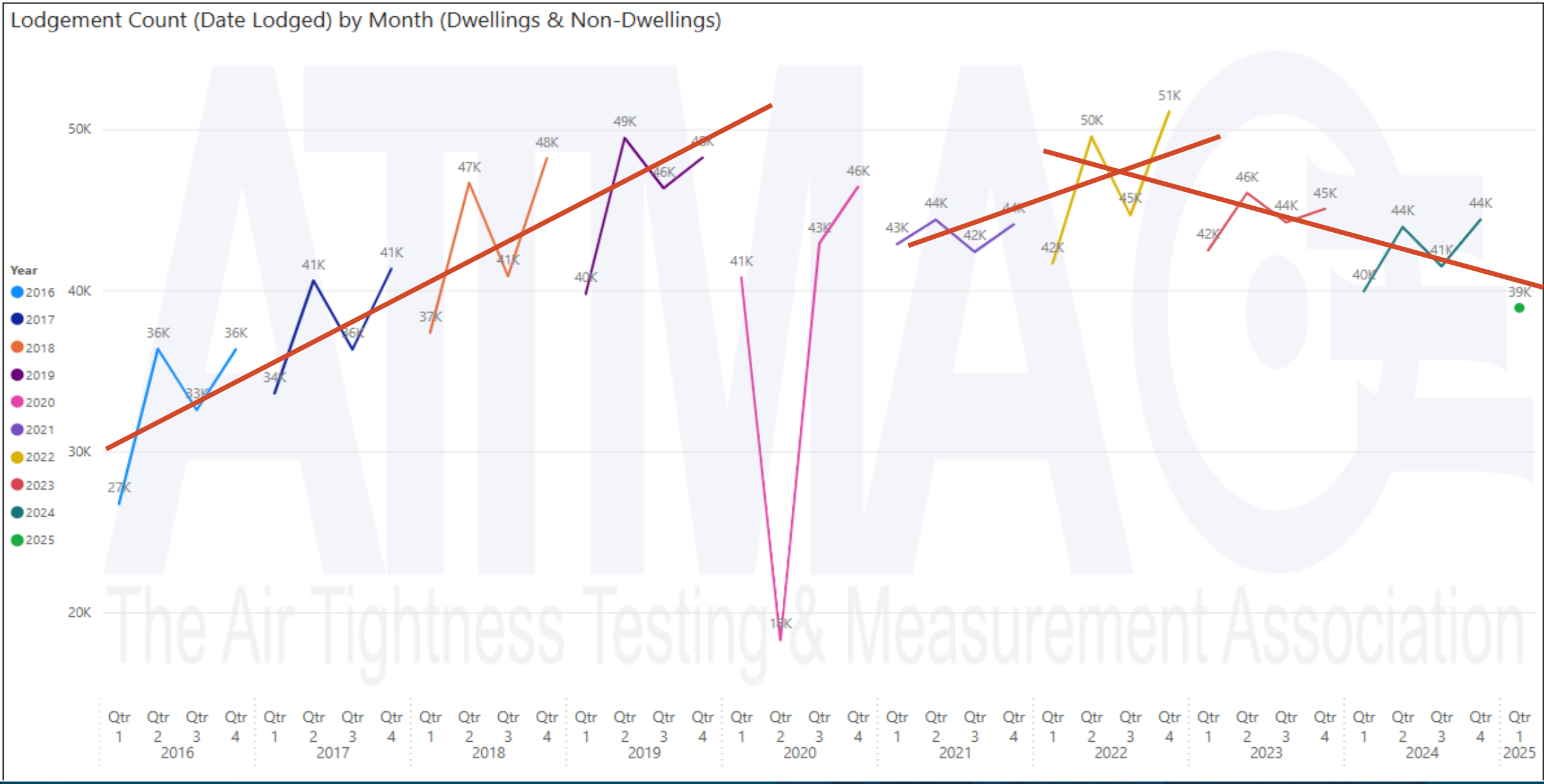
Data is the new Gold

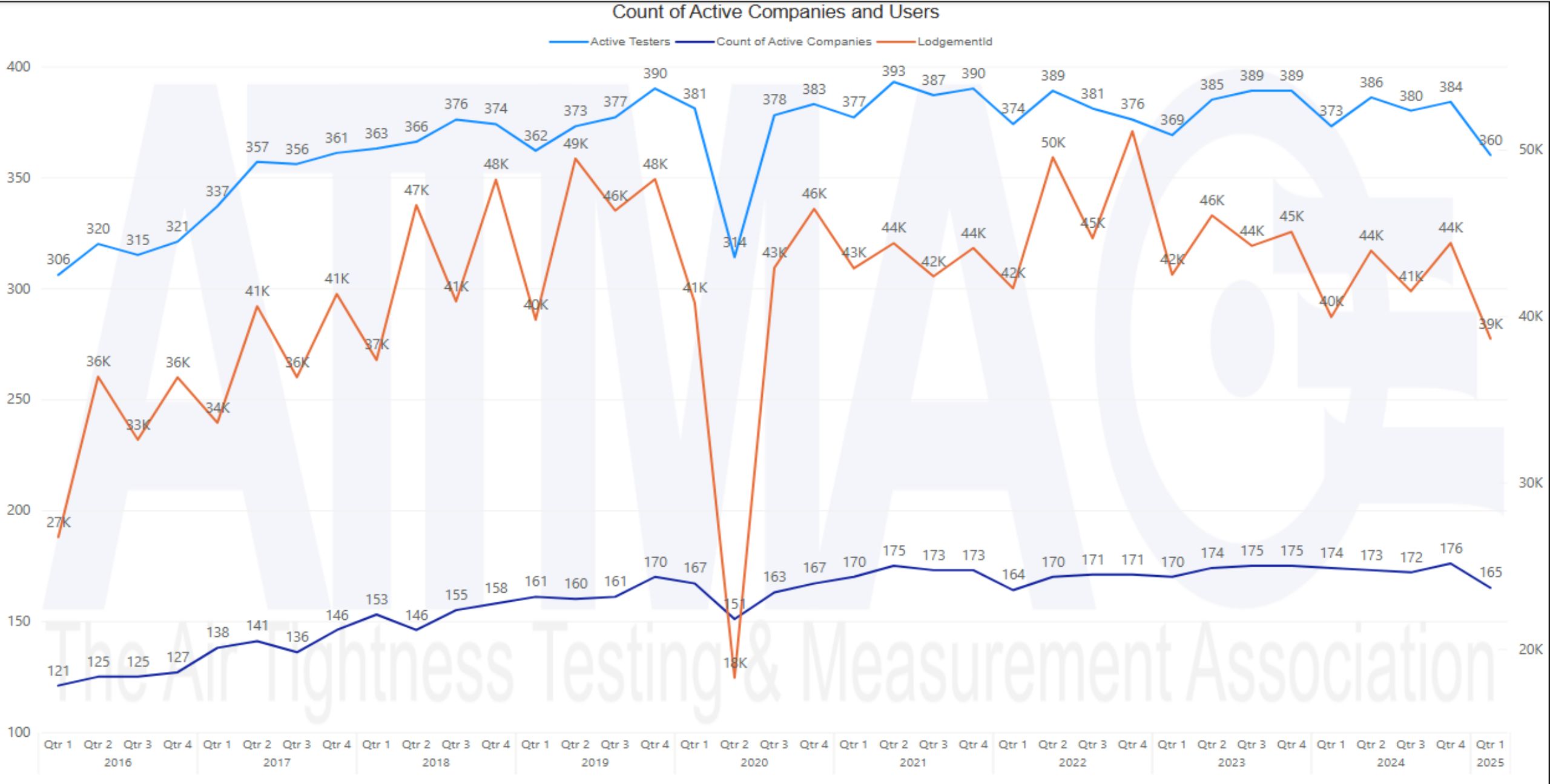
- The ATTMA Lodgement system holds 1.6 million completed air tightness tests, recorded over the last 10 years.
- That data can (and is) able to influence and change Government policy.
- It is also used to measure the influence / effect of Government Policy



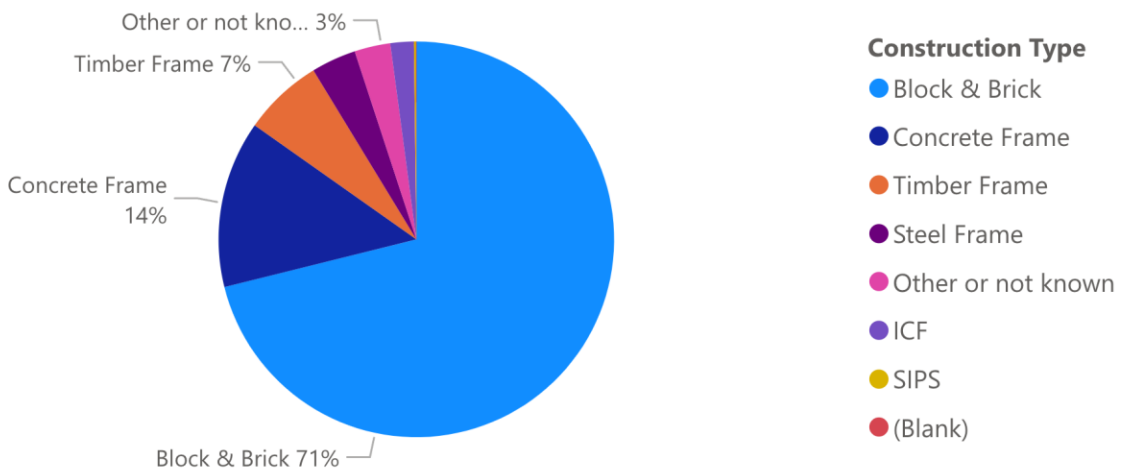




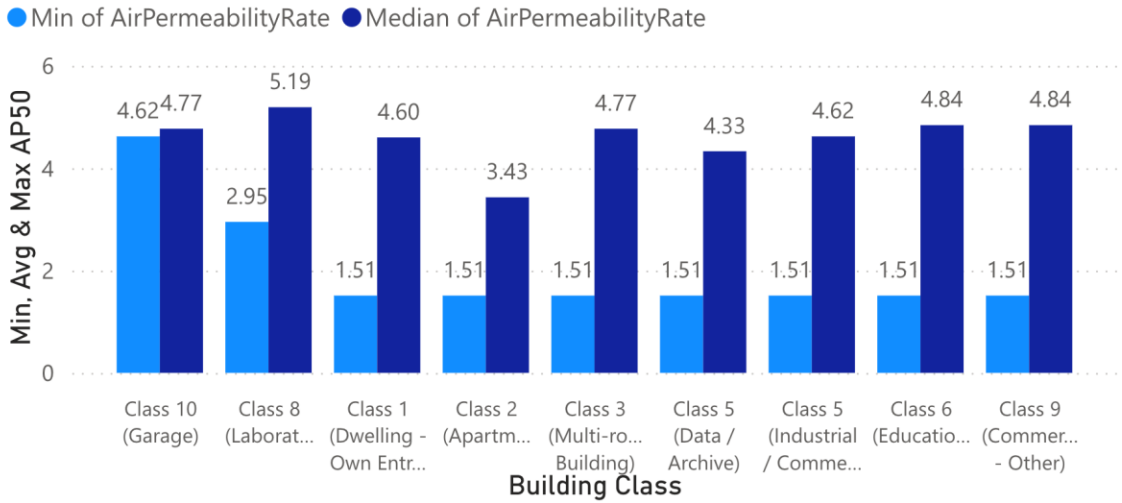




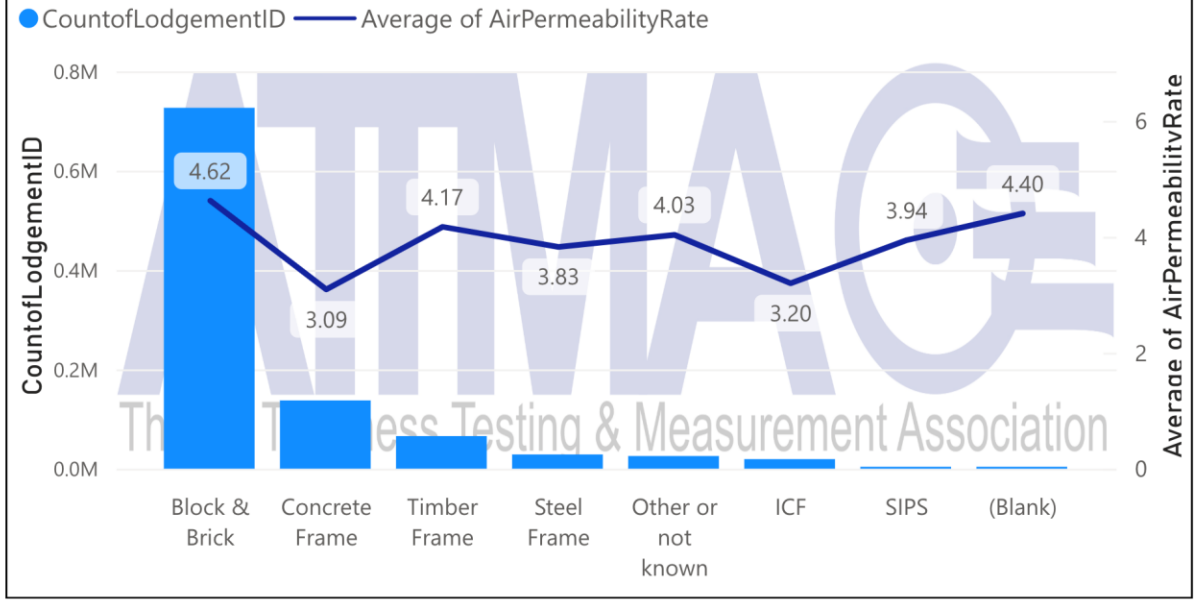
Construction Type Percentage (UK)



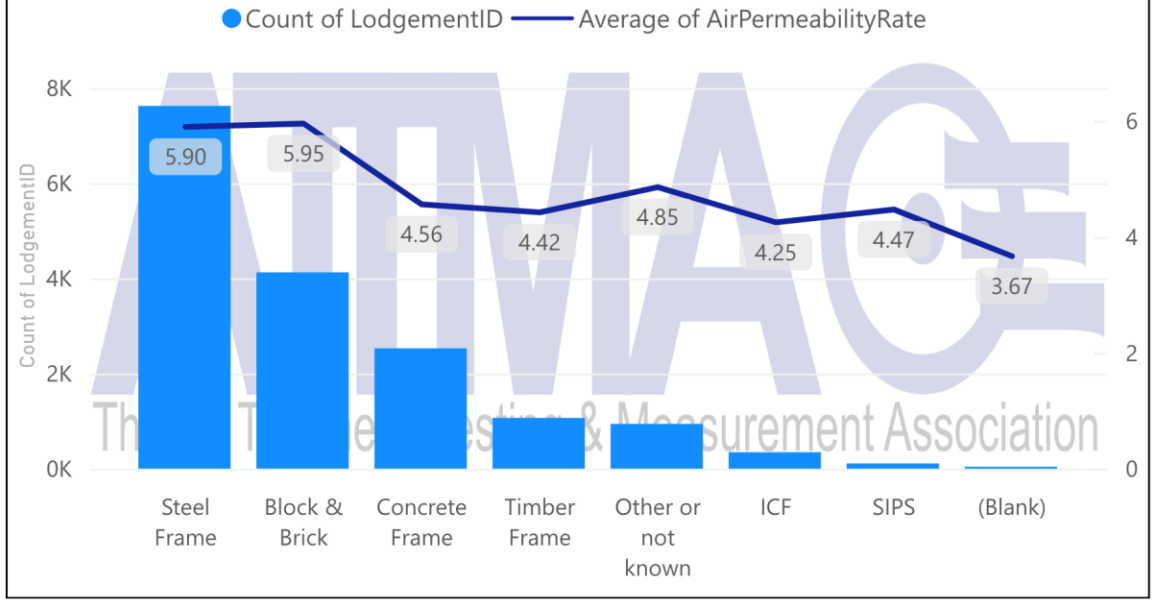
Class of Building

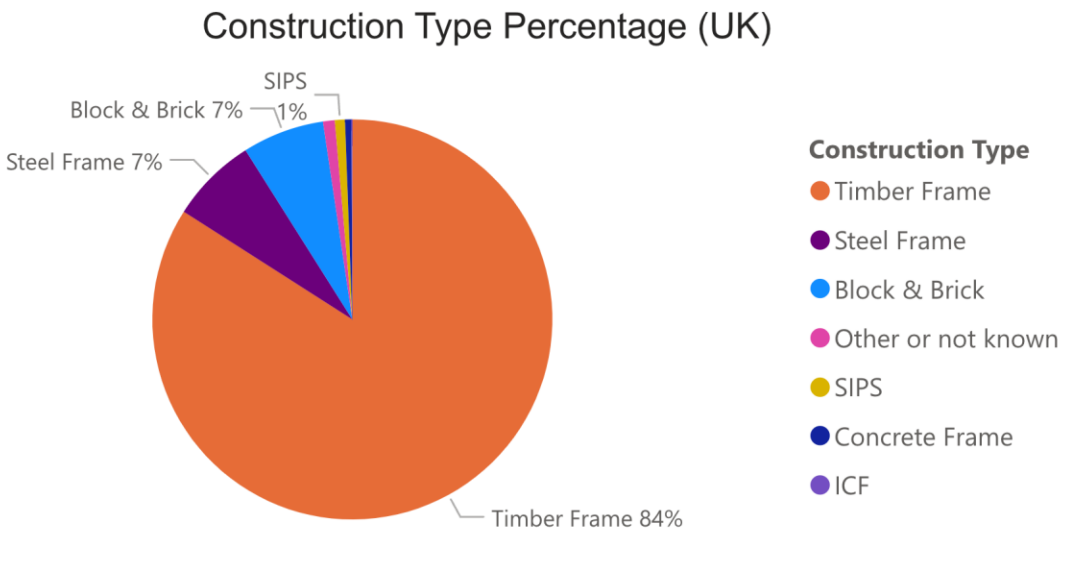


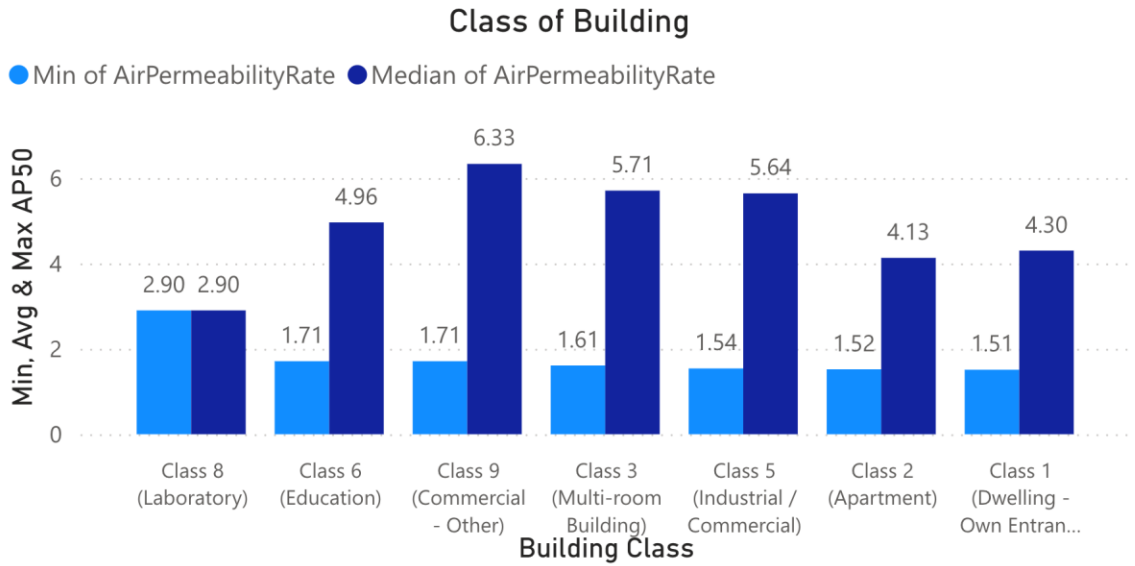
Construction Type & Average Air Permeability (Dwellings)

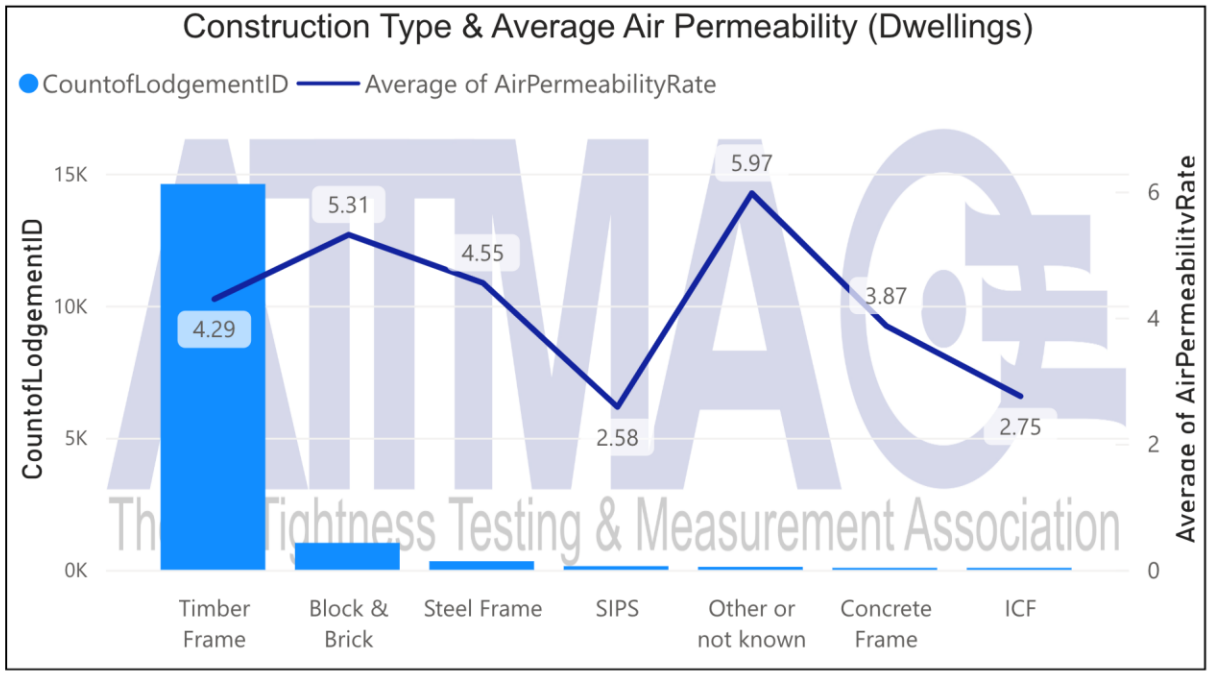


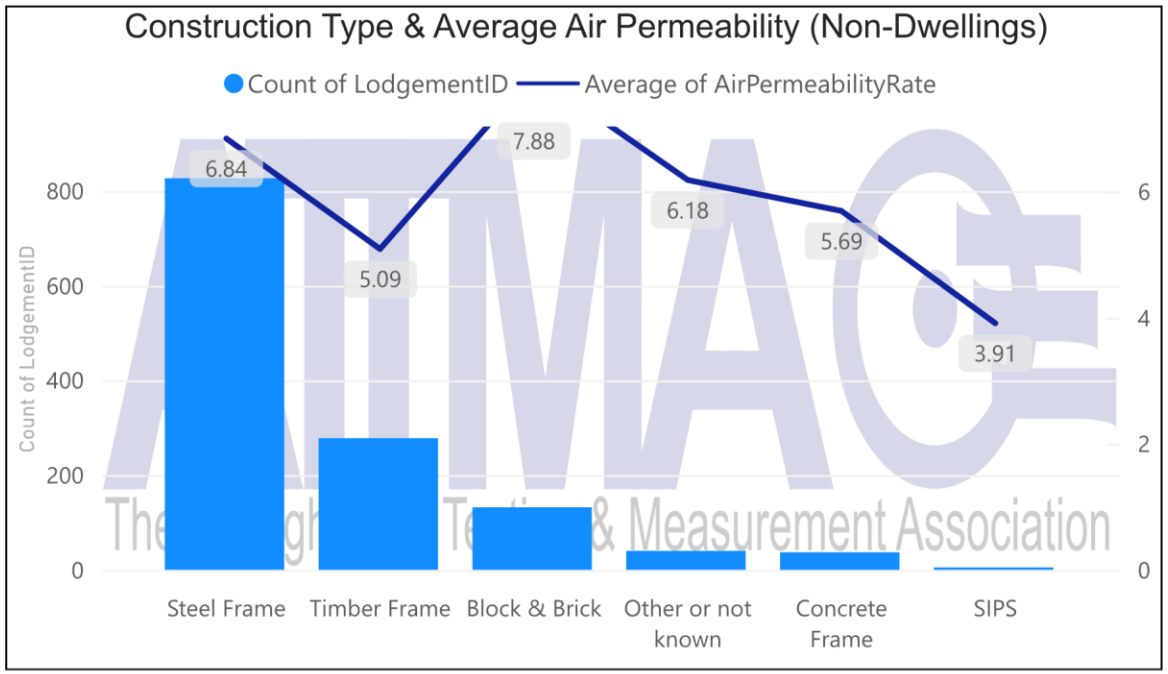
Construction Type & Average Air Permeability (Non-Dwellings)



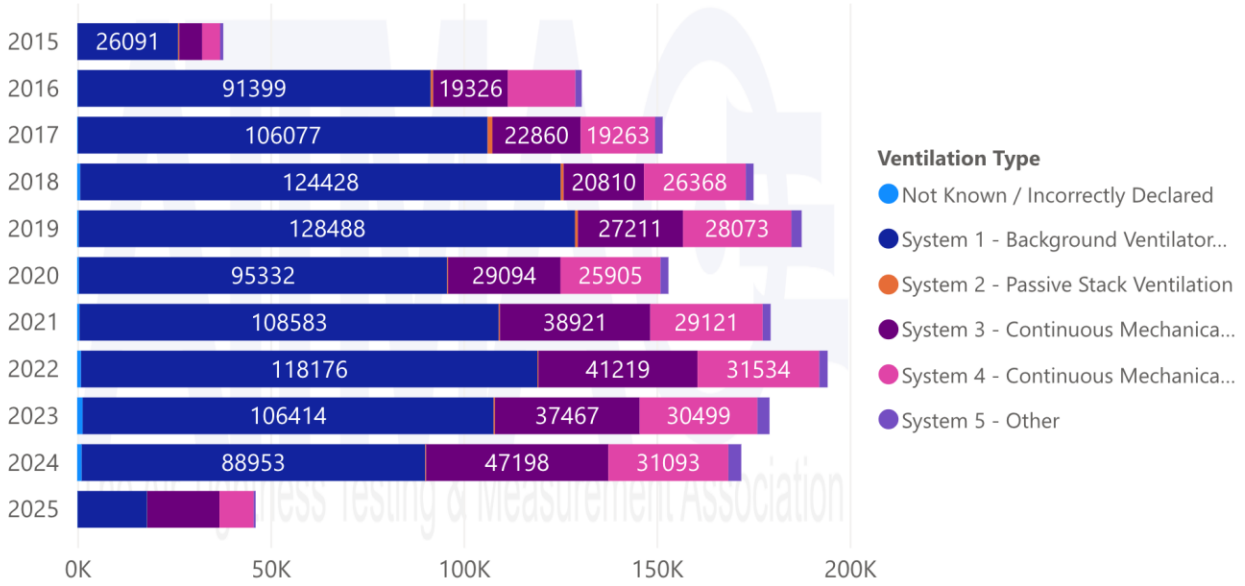




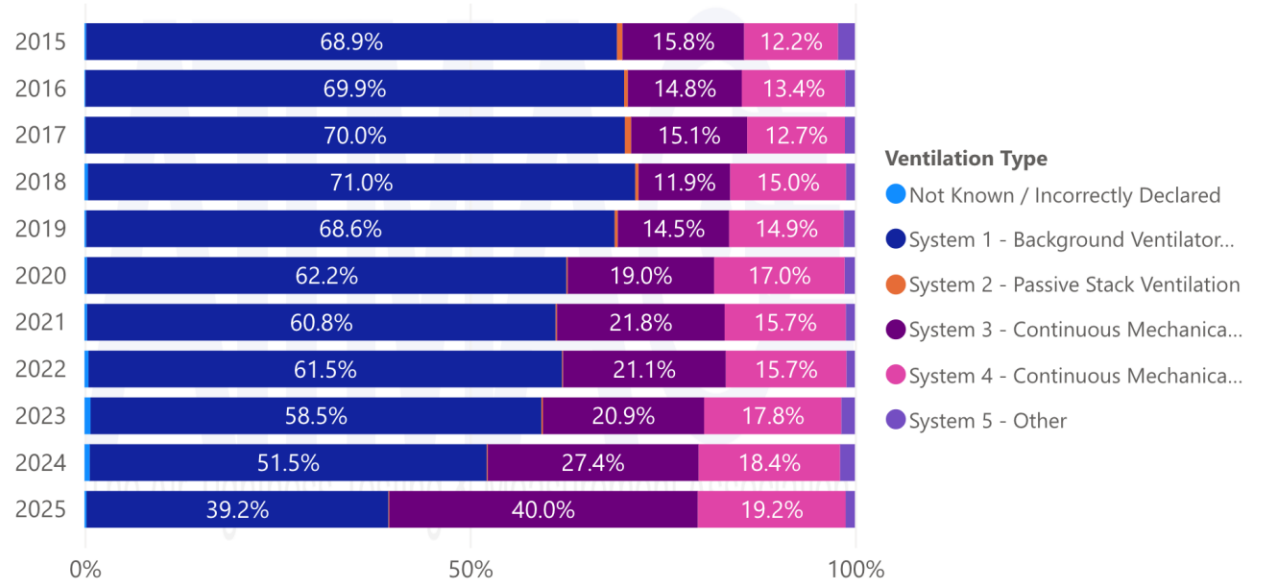




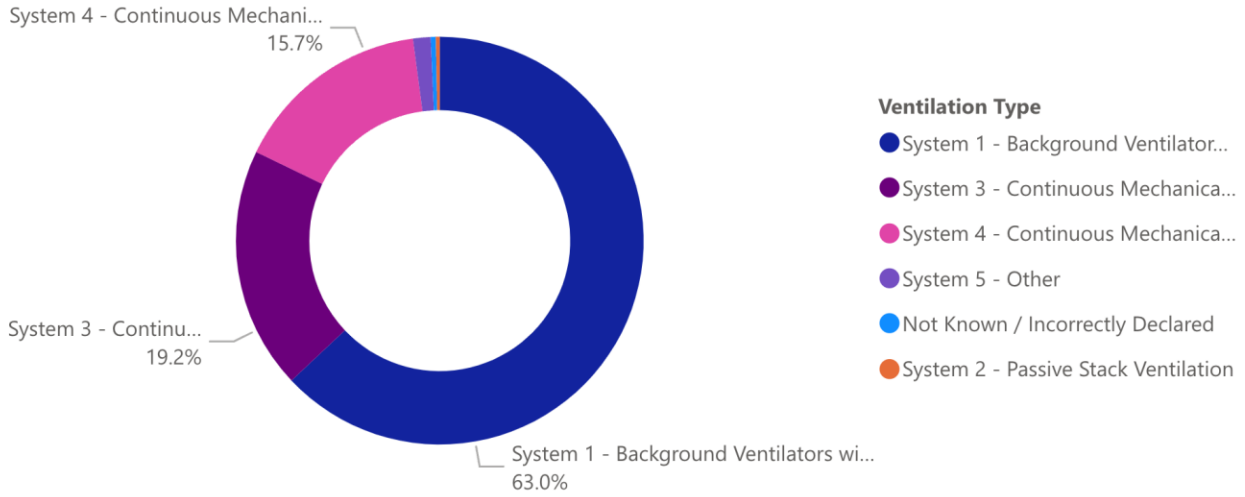
Ventilation Type by Year



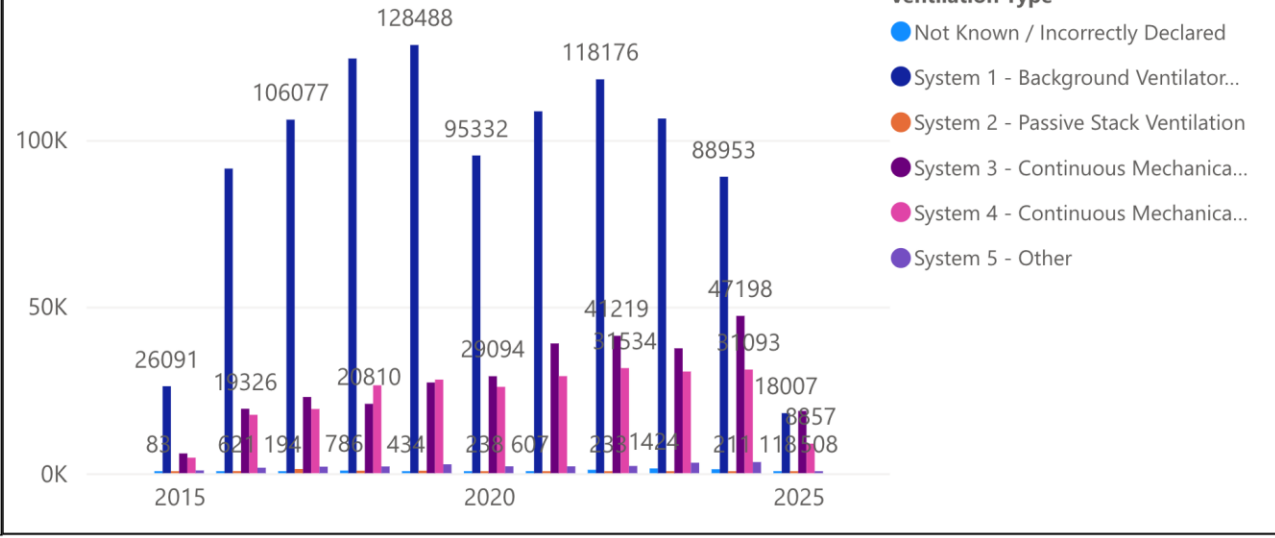
Ventilation Type by Year

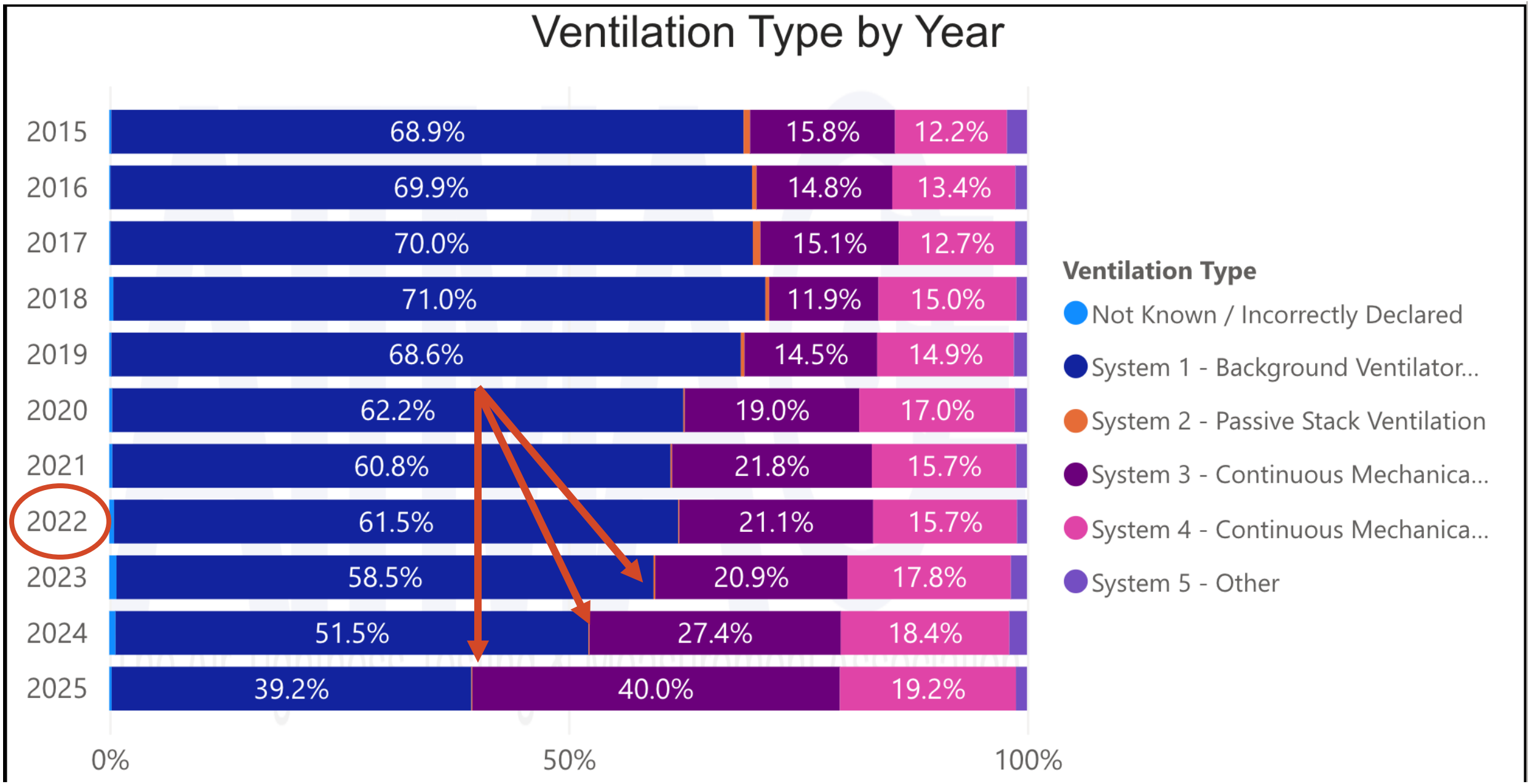


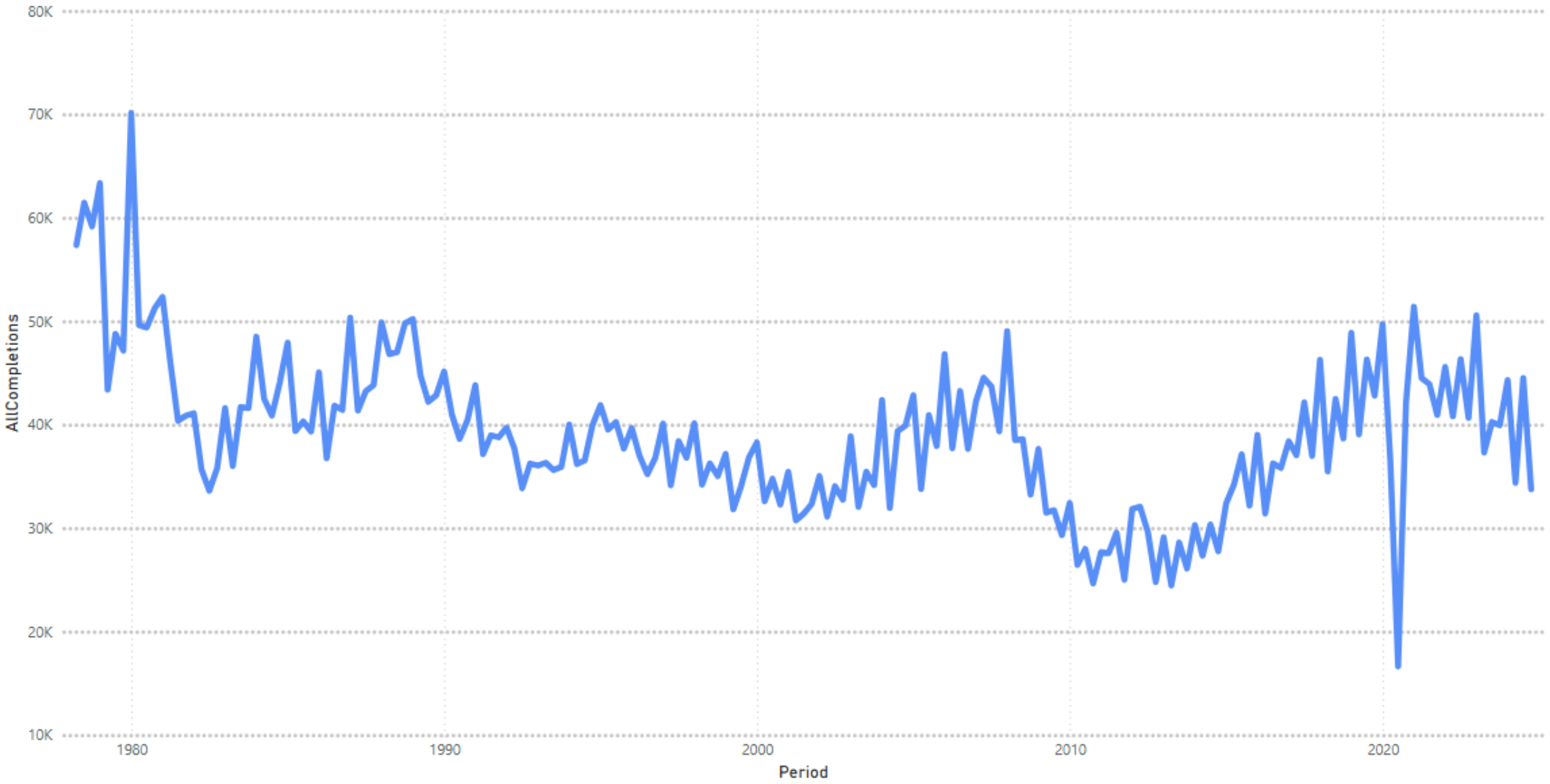
Ventilation Type Overall

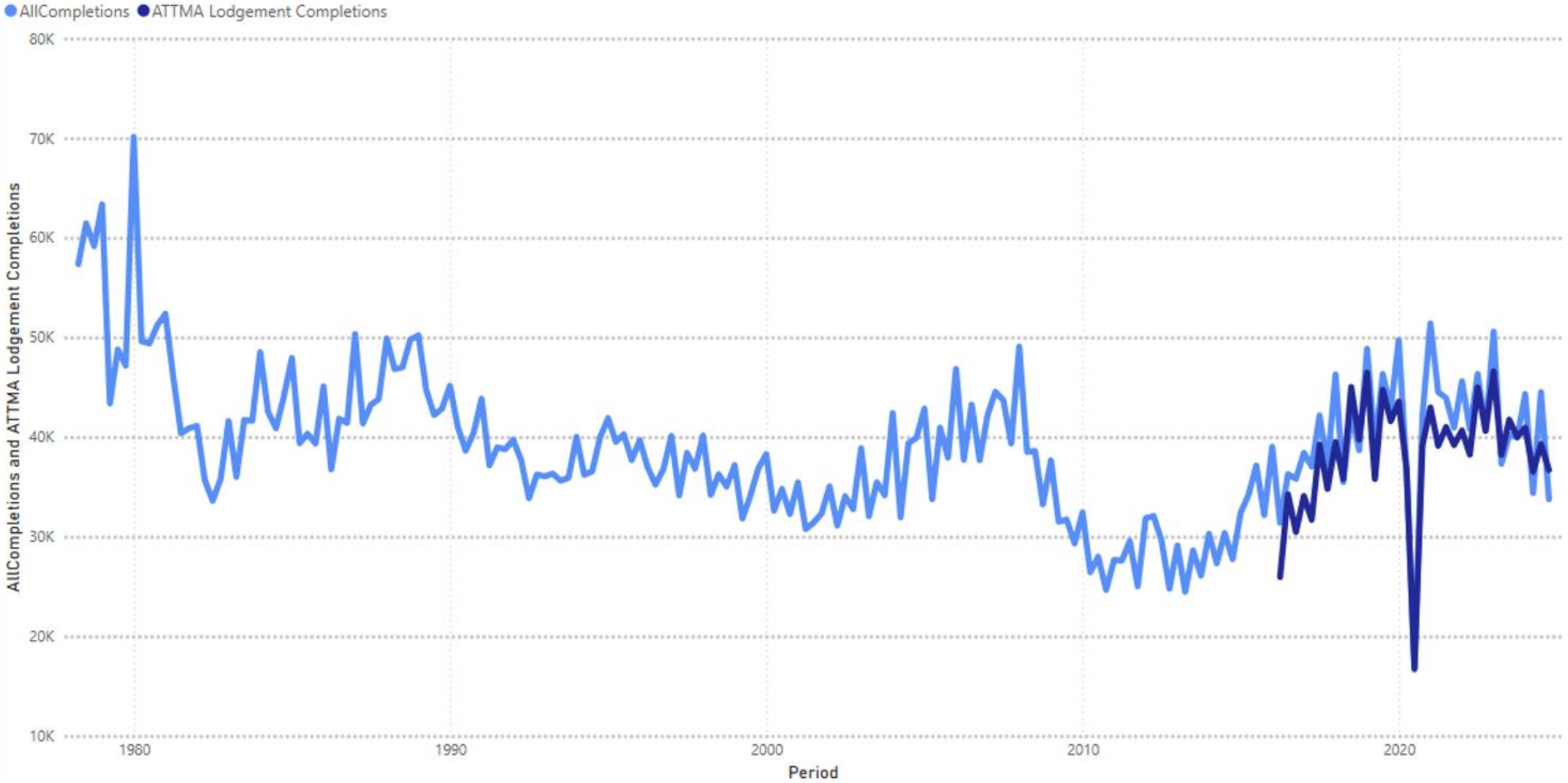


Ventilation Type by Year




Ventilation Type by Year
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
68.9%
15.8%
12.2%
69.9%
14.8%
13.4%
70.0%
15.1%
12.7%
71.0%
11.9%
15.0%
68.6%
14.5%
14.9%
62.2%
19.0%
17.0%
60.8%
21.8%
15.7%
61.5%
21.1%
15.7%
58.5%
20.9%
17.8%
51.5%
27.4%
18.4%
39.2%
40.0%
19.2%
0%
50%
100%
Ventilation Type
Not Known / Incorrectly Declared
System 1 - Background Ventilator...
System 2 - Passive Stack Ventilation
System 3 - Continuous Mechanica...
System 4 - Continuous Mechanica...
System 5 - Other


80K
70K
60K
50K
40K
30K
20K
10K
AllCompletions
1980
1990
2000
2010
2020
Period


AllCompletions
ATTMA Lodgement Completions
80K
70K
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AllCompletions and ATTMA Lodgement Completions
1980
1990
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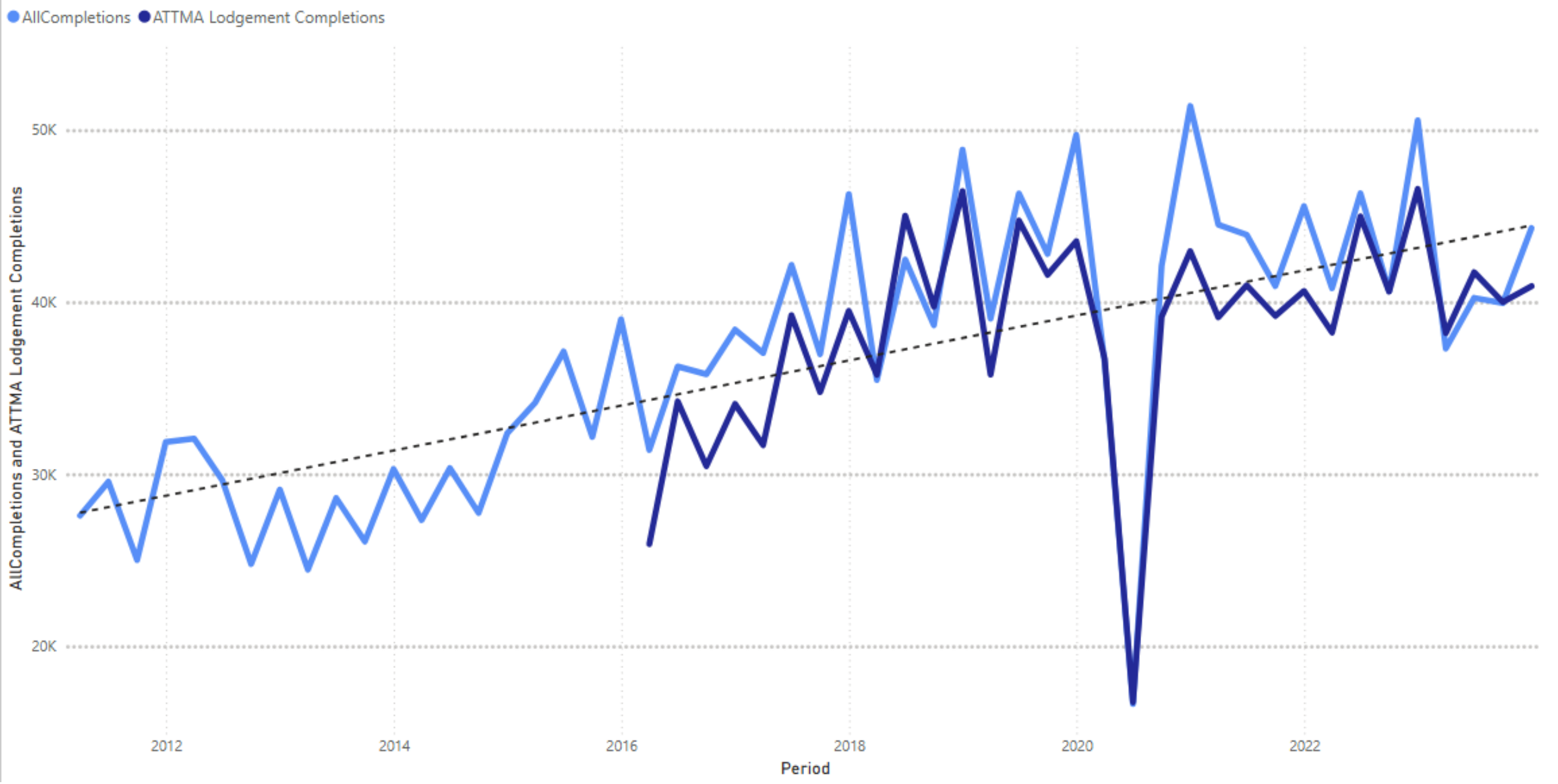
2010
2020
Period


AllCompletions
ATTMA Lodgement Completions
50K
40K
30K
20K
AllCompletions and ATTMA Lodgement Completions
2012
2014
2016
2018
2020
2022
Period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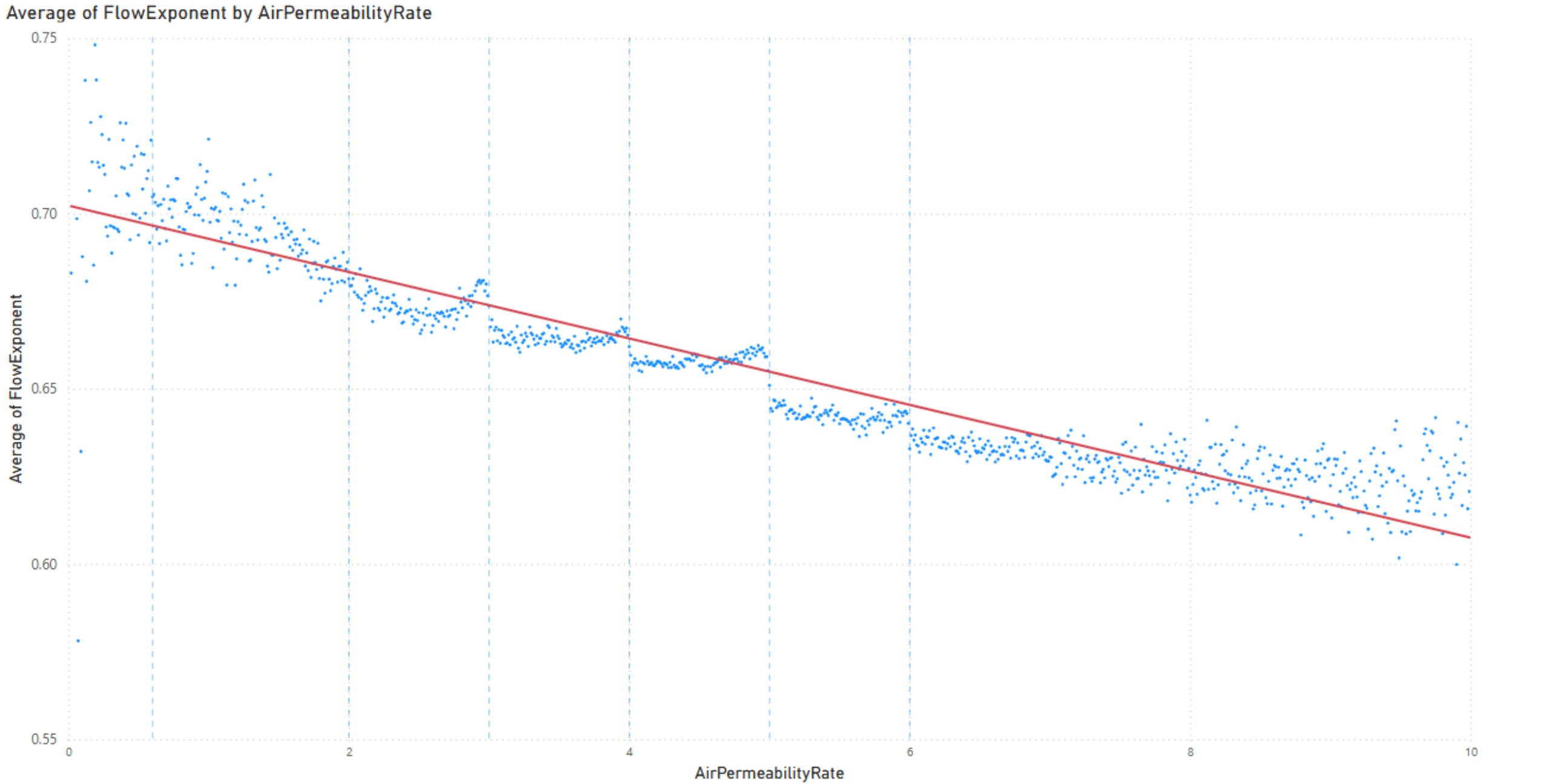
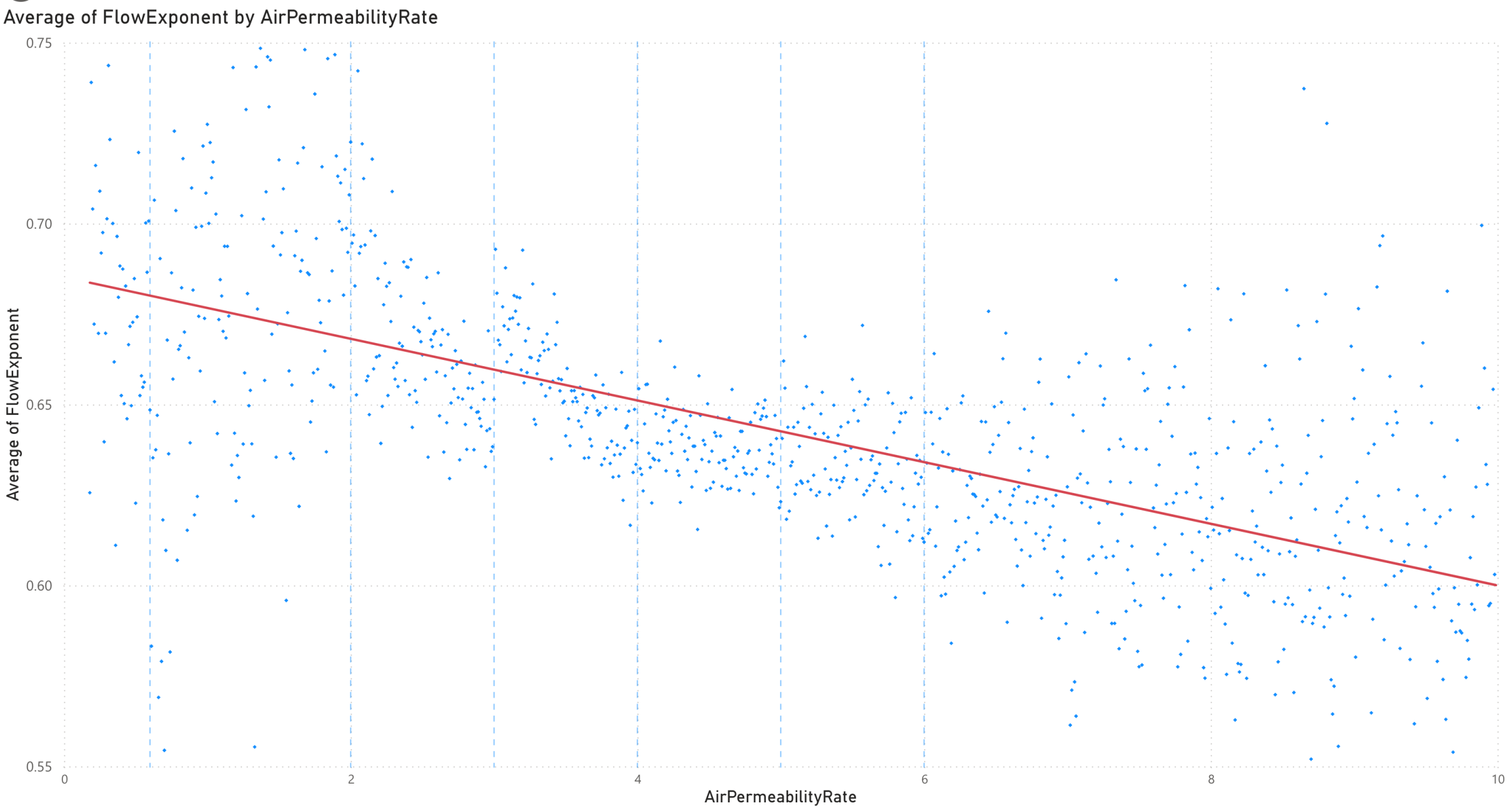
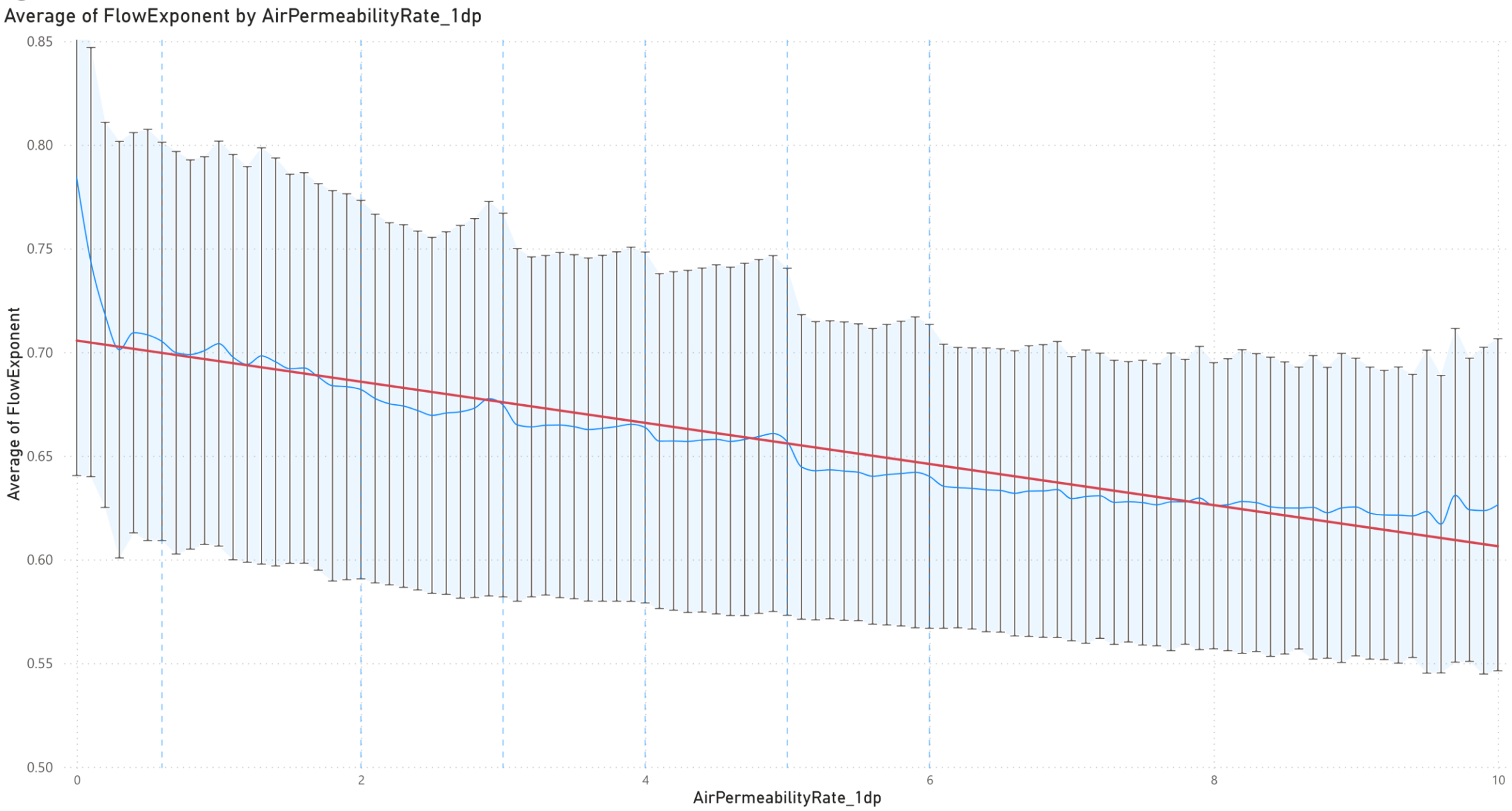
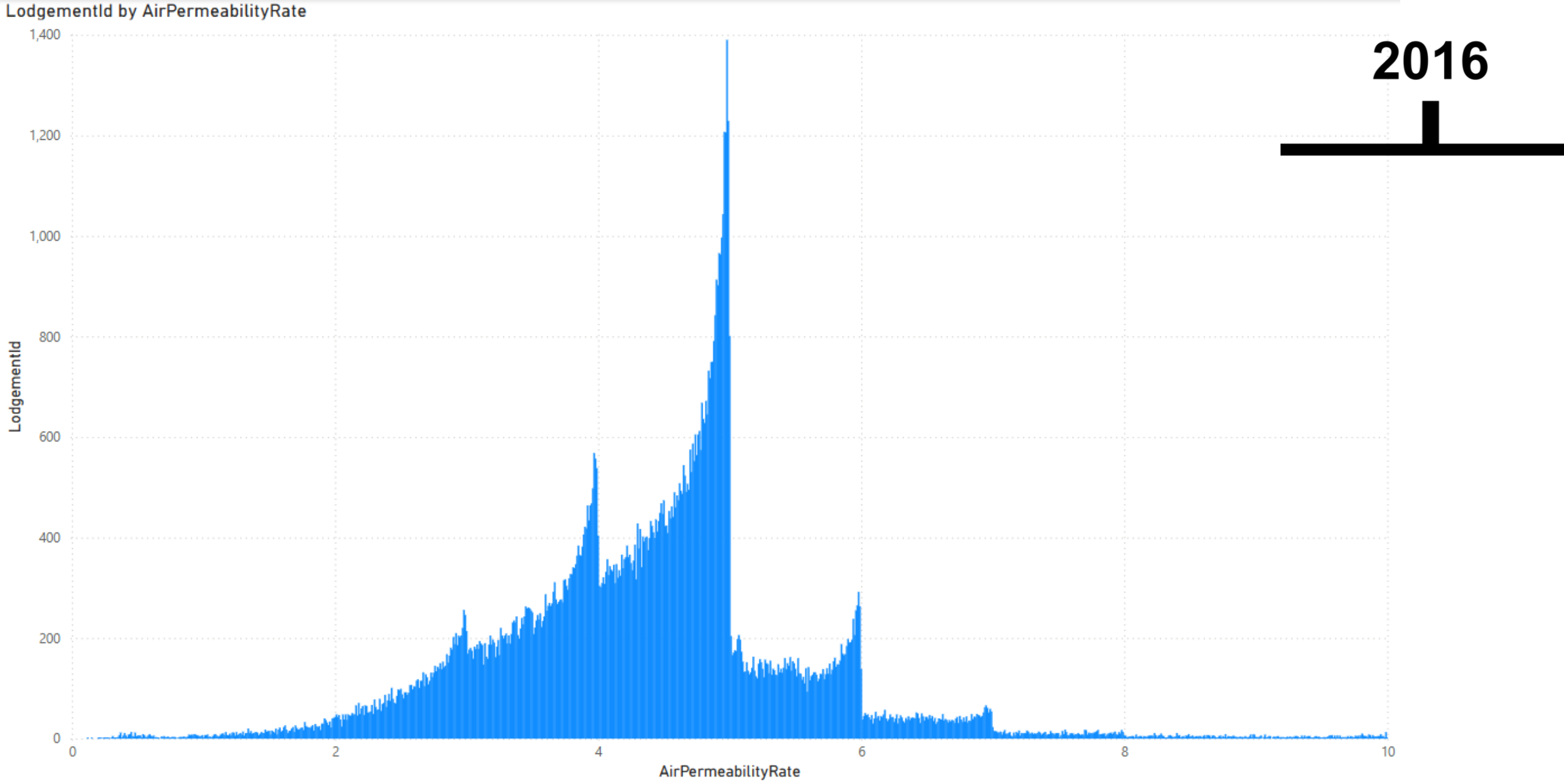
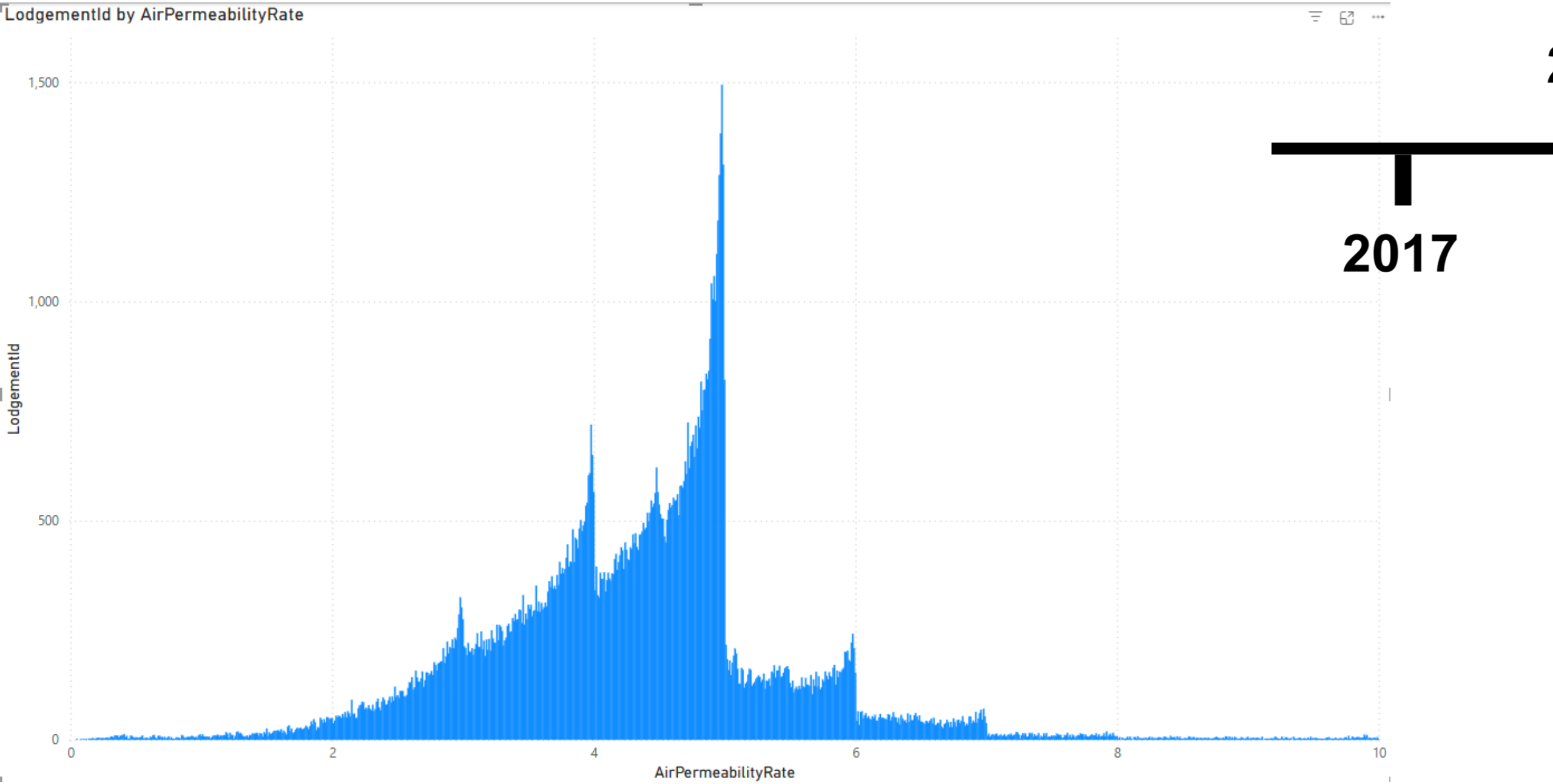

Average of FlowExponent by AirPermeabilityRate
0.75
0.70
0.65
0.60
0.55
Average of FlowExponent
0
2
4
6
8
10
AirPermeabilityRate

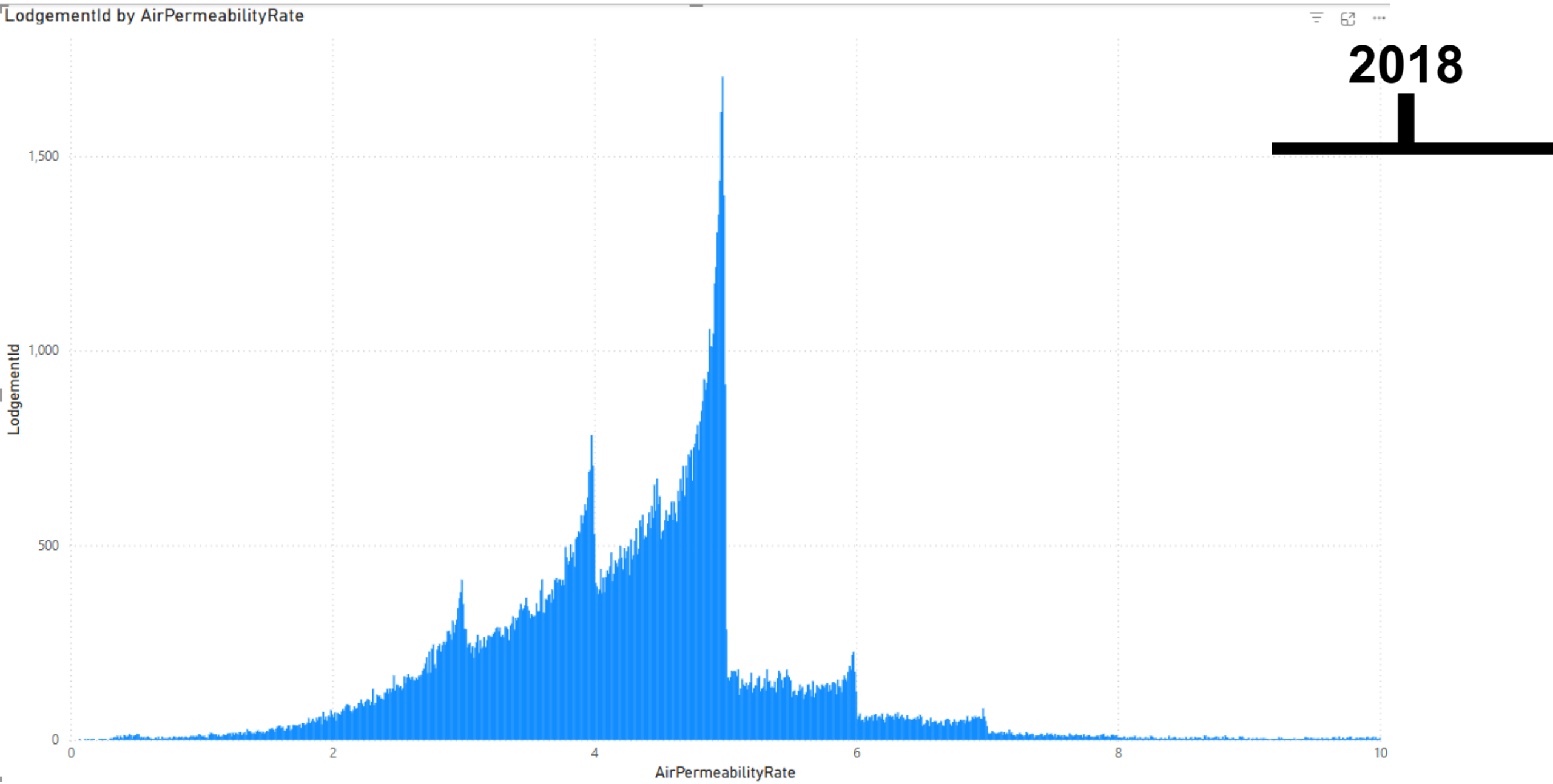

Average of FlowExponent by AirPermeabilityRate
0.75
0.70
0.65
0.60
0.55
Average of FlowExponent
0
2
4
6
8
10
AirPermeabilityRate

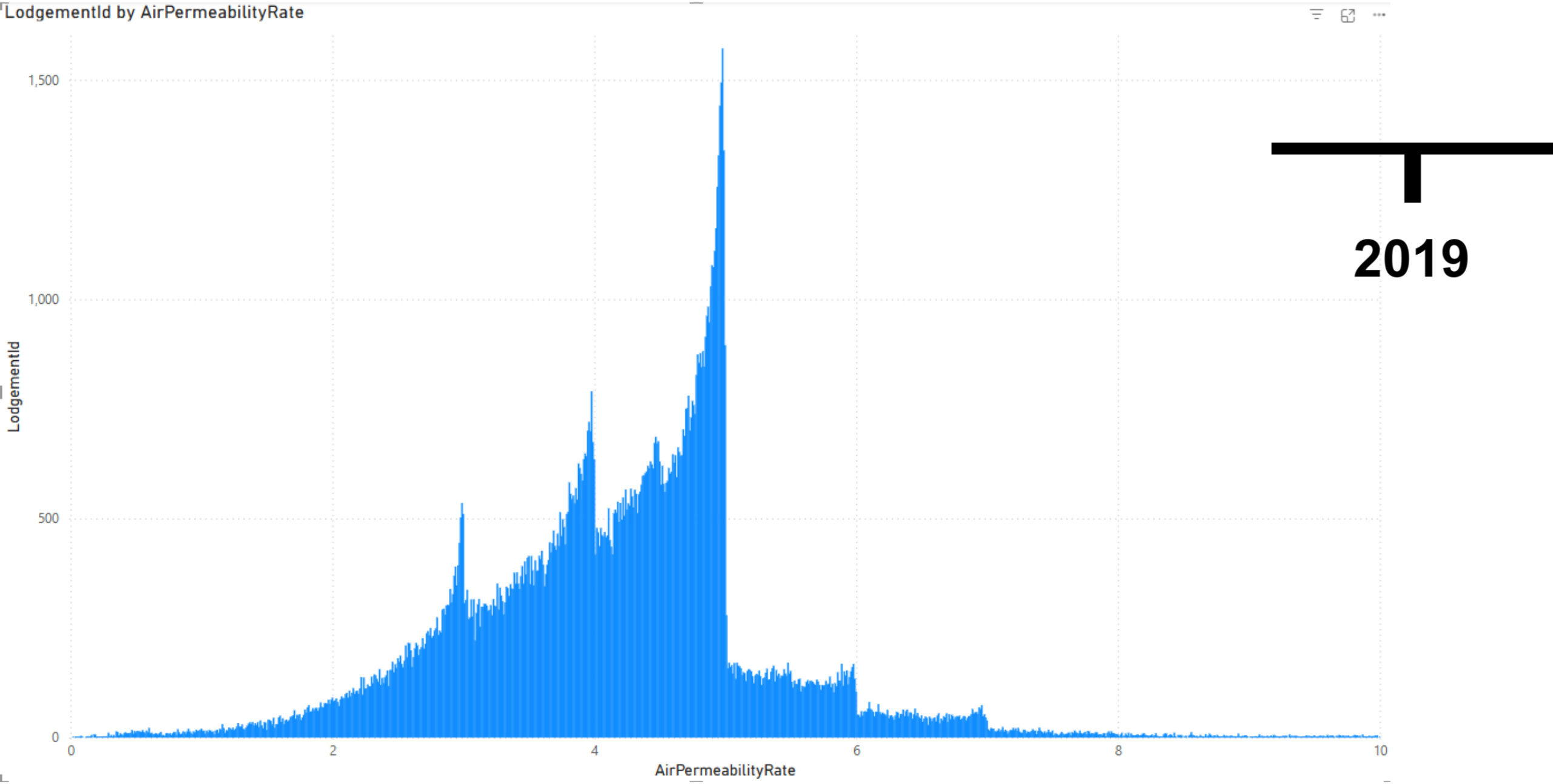

Average of FlowExponent by AirPermeabilityRate_1dp
0.85
0.80
0.75
0.70
0.65
0.60
0.55
0.50
Average of FlowExponent
0
2
4
6
8
10
AirPermeabilityRate_1dp


LodgementId by AirPermeabilityRate
2016
1,400
1,200
1,000
800
600
400
200
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate

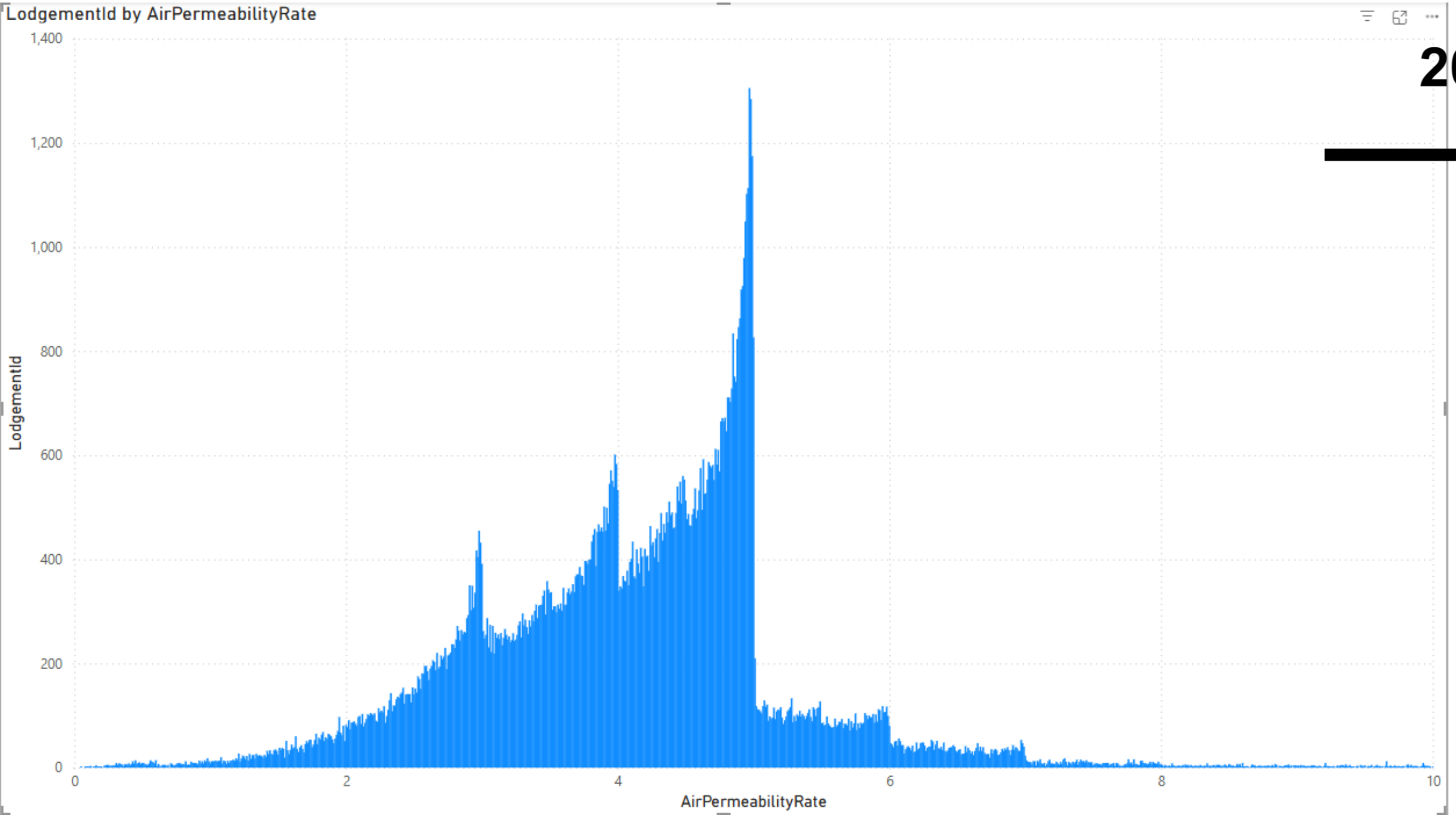

LodgementId by AirPermeabilityRate
1,500
1,000
500
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate

2017

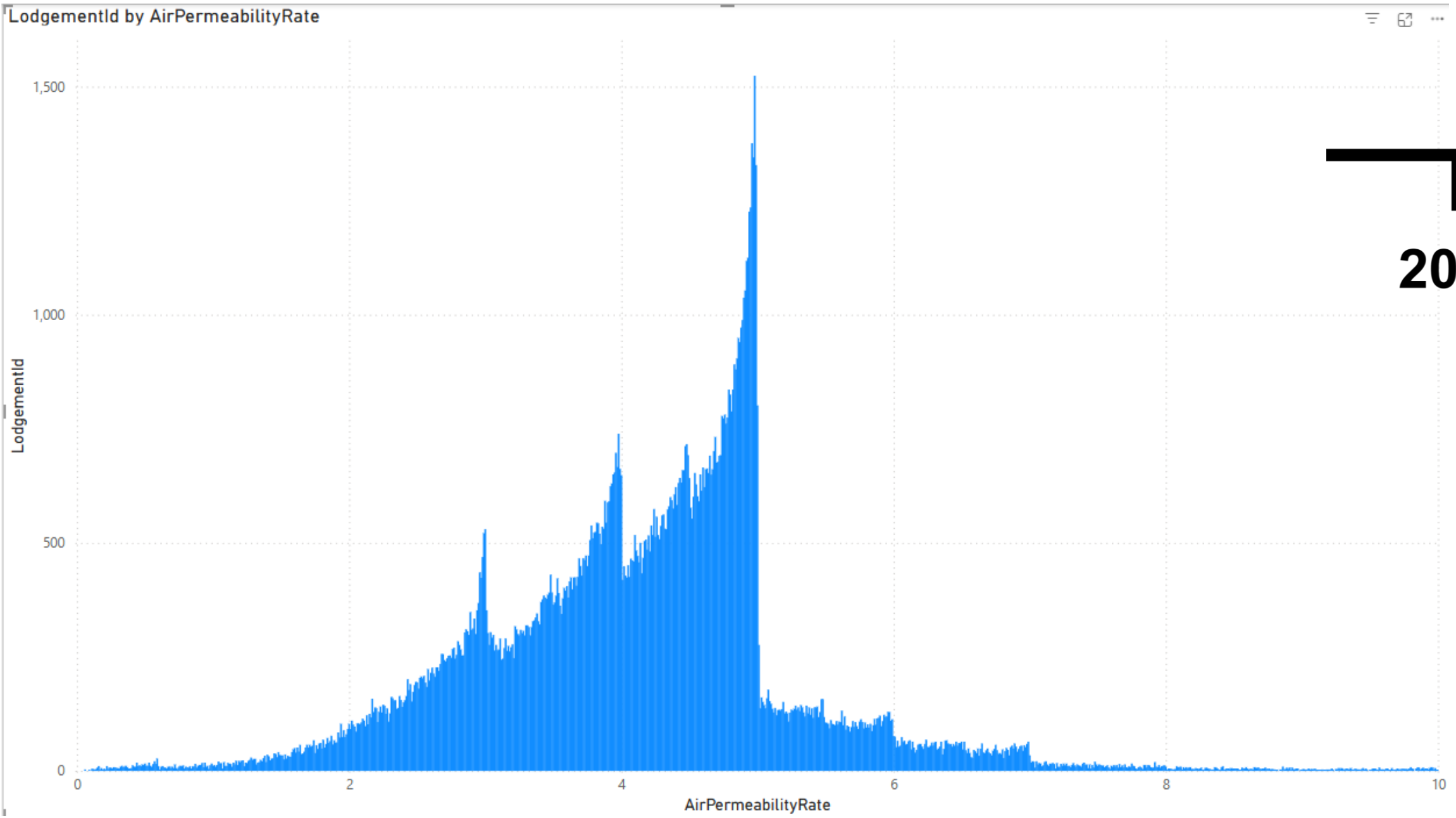

LodgementId by AirPermeabilityRate
2018
1,500
1,000
500
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate


LodgementId by AirPermeabilityRate
1,500
1,000
500
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate

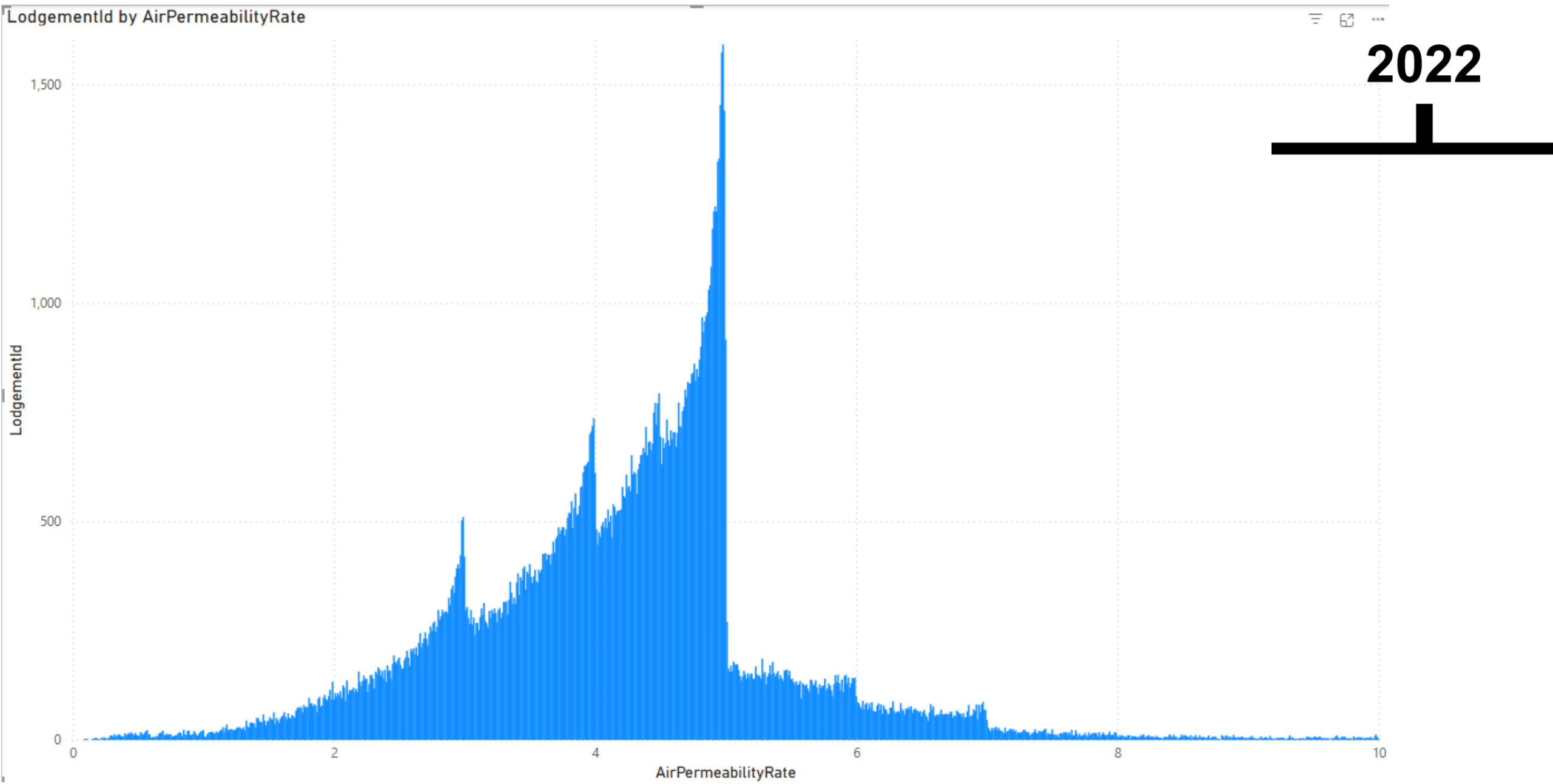
2019

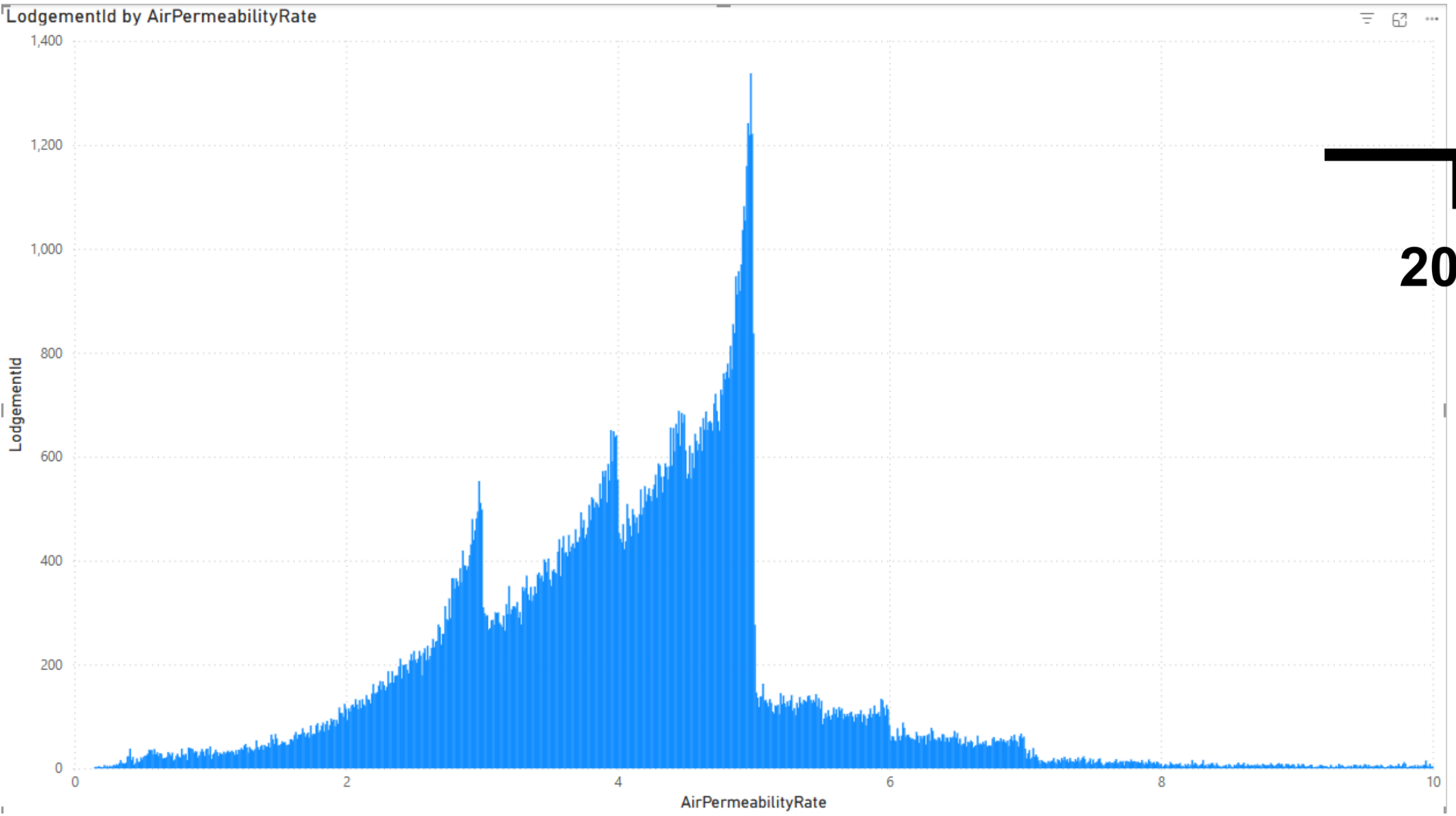

LodgementId by AirPermeabilityRate
1,400
1,200
1,000
800
600
400
200
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate

2020

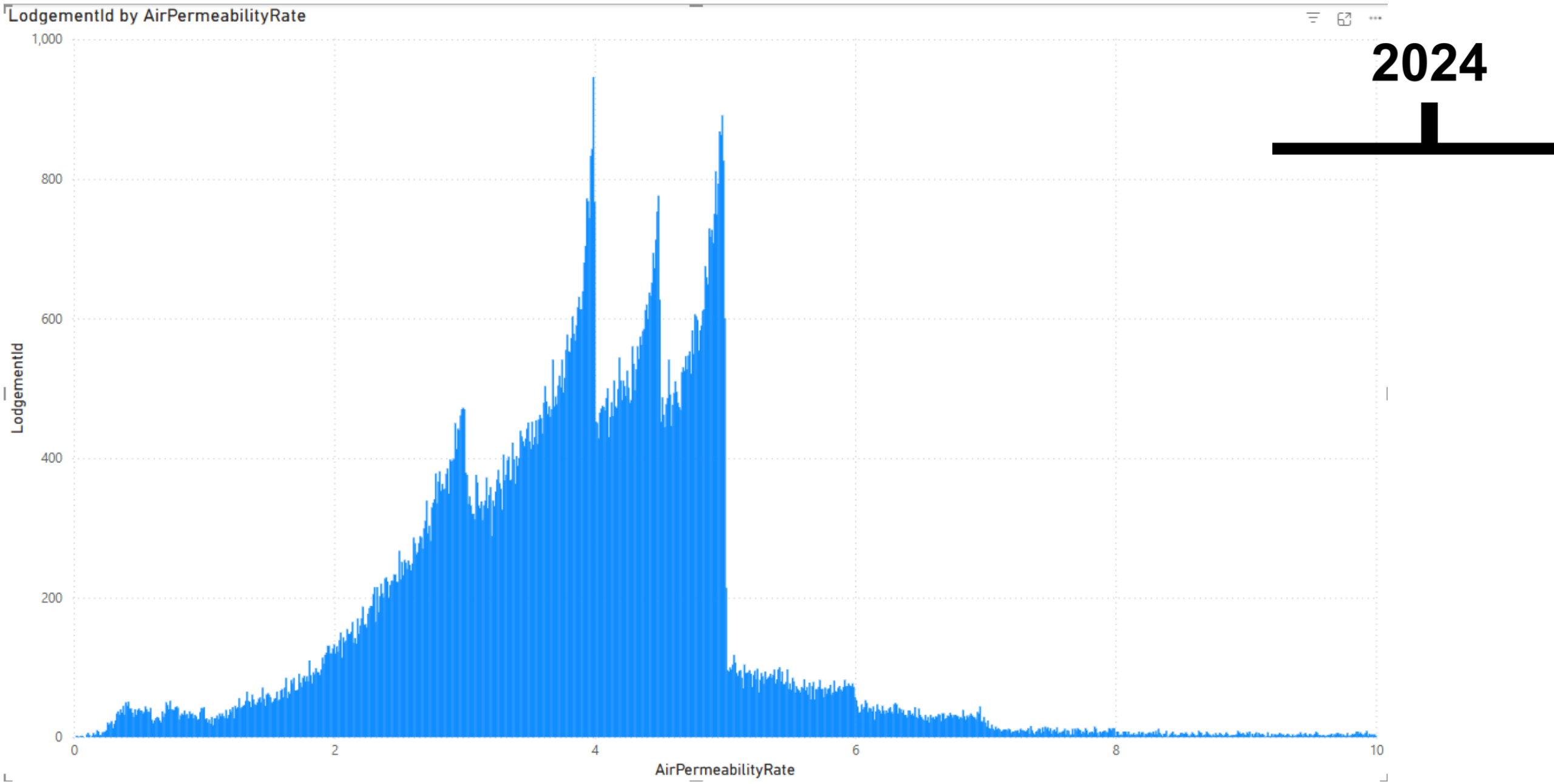

LodgementId by AirPermeabilityRate
1,500
1,000
500
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate

2021

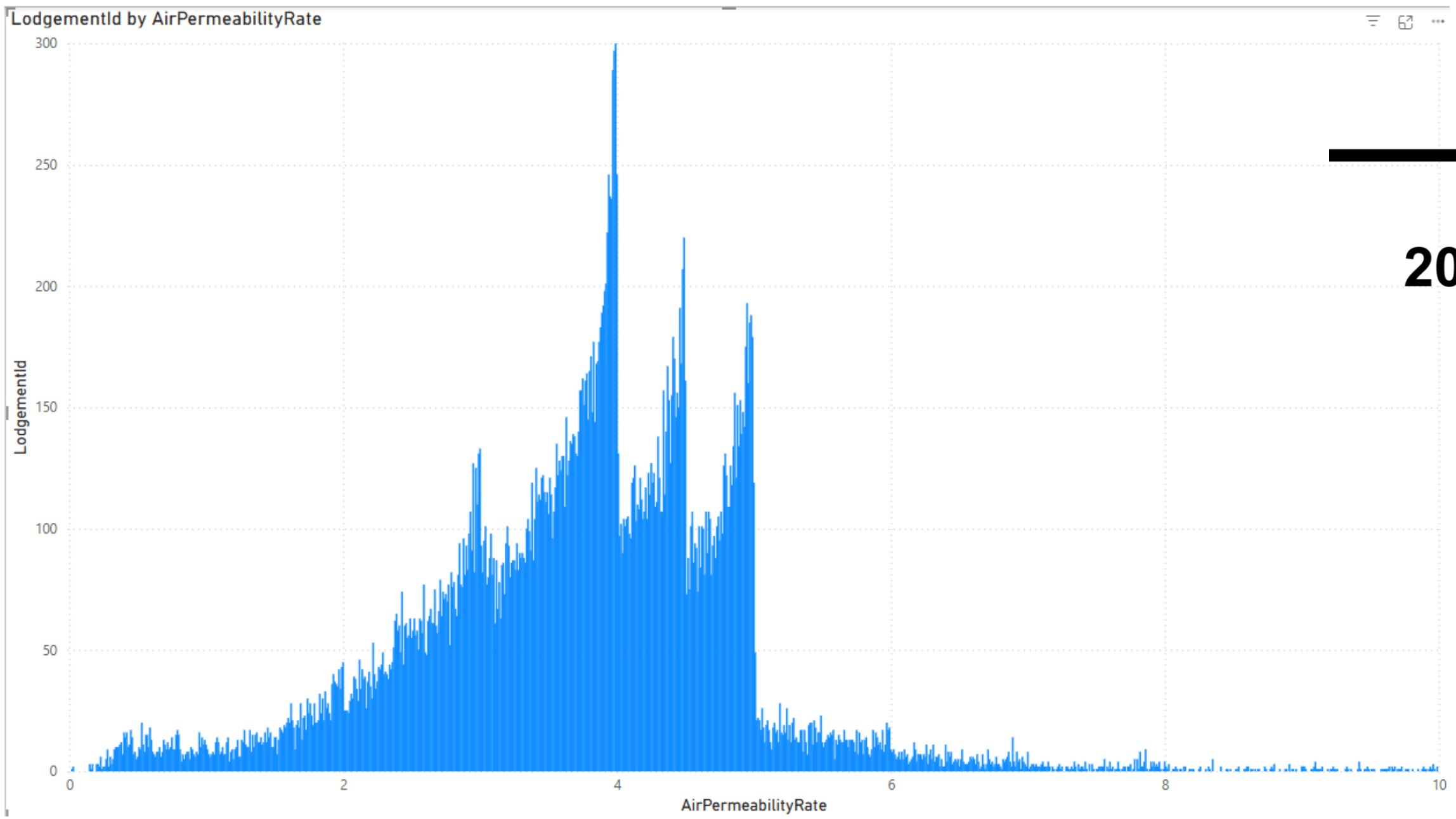

LodgementId by AirPermeabilityRate
2022
1,500
1,000
500
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate


LodgementId by AirPermeabilityRate
1,400
1,200
1,000
800
600
400
200
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate

2023


LodgementId by AirPermeabilityRate
1,000
800
600
400
200
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate

2024


LodgementId by AirPermeabilityRate
300
250
200
150
100
50
0
LodgementId
0
2
4
6
8
10
AirPermeabilityRate

2025

In conclusion

- Using a centralised Lodgement system allows the data to be analysed
- Changes and consequences of regulation can be reviewed over a number of months and years.
- Correctly formatted data is essential to being able to manipulate the data
- Using a single page, uniform certificate makes it easier for building code inspectors to ensure the data is genuine and certified.

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ATTMA
The Air Tightness Testing & Measurement Association


abaa2025
building
enclosure
conference