

# Modern T-SQL

Kathi Kellenberger

# Kathi Kellenberger



Simple-Talk Editor at Redgate  
Co-Leader of PASS WIT Virtual Group  
Instructor at LaunchCode  
Lifelong learner and teacher



# Agenda

- The stock market problem
- The subscription problem
- The end of the month problem
- The islands and gaps problem
- Intelligent query processing

# Stuck doing what we know works

Cursors or loops

We know they are slow, but sometimes that's the only way

Self-joins

Hey, at least it's one query!

Scalar UDFs

Isn't code reuse good?



# The stock market problem

Photo by Pixabay from [Pexels](#)

	TickerSymbol	TradeDate	ClosePrice	PrevPrice	Change
1	Z1	2017-10-11	28.06	NULL	NULL
2	Z1	2017-10-12	28.49	28.06	0.43
3	Z1	2017-10-13	28.55	28.49	0.06
4	Z2	2017-10-11	63.55	NULL	NULL
5	Z2	2017-10-12	63.22	63.55	-0.33
6	Z2	2017-10-13	62.34	63.22	-0.88
7	Z3	2017-10-11	57.72	NULL	NULL
8	Z3	2017-10-12	56.76	57.72	-0.96
9	Z3	2017-10-13	56.99	56.76	0.23

# More about LAG and LEAD

Window functions new with 2012!

Grab a column from another row

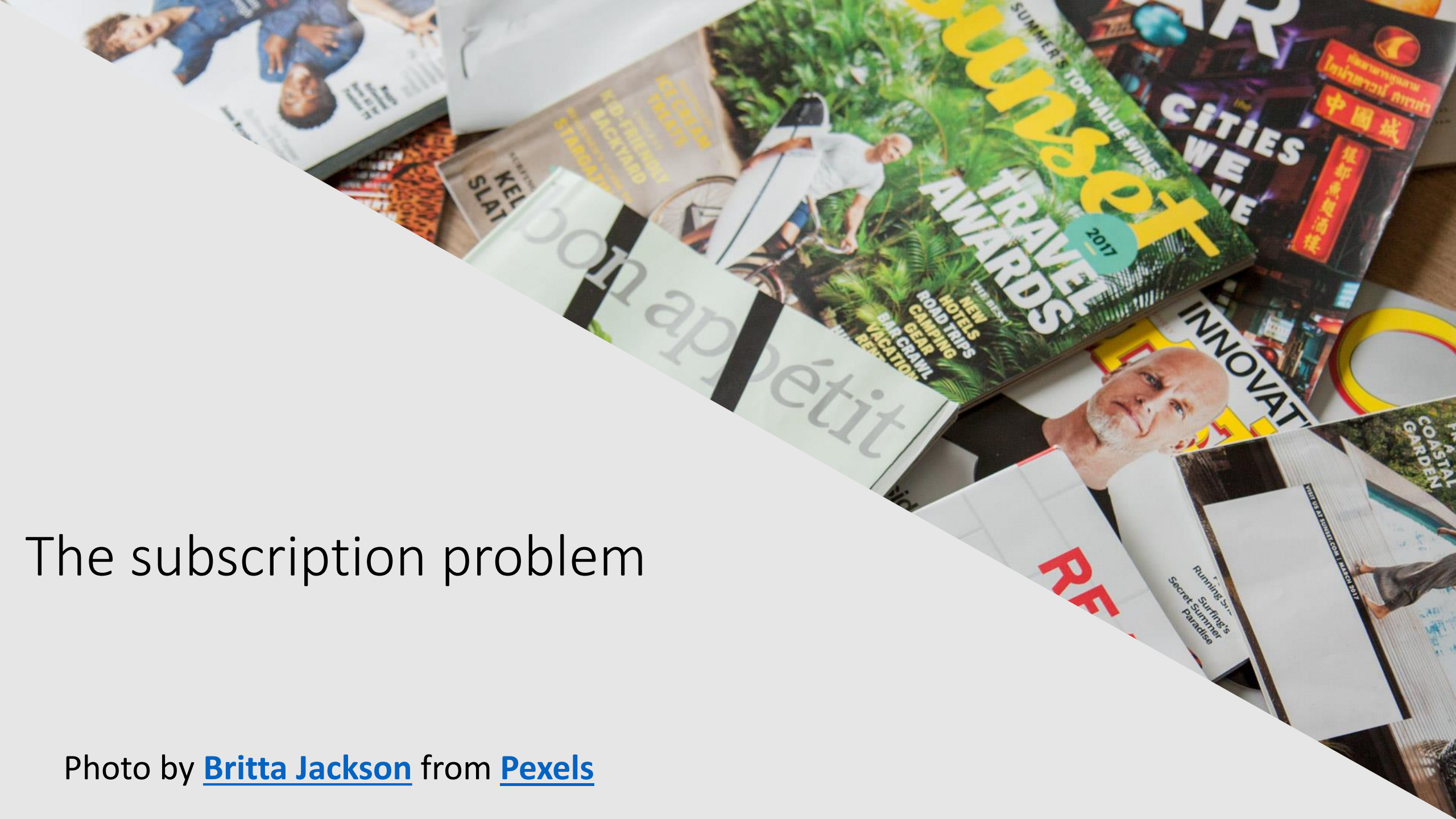
## The OVER clause

Line the rows up with ORDER BY

Divide the rows with PARTITION BY

OVER(PARTITION BY Symbol ORDER BY CloseDate)





# The subscription problem

Photo by [Britta Jackson](#) from [Pexels](#)



	Registration_ID	DateJoined	DateLeft
1	C0682	2000-01-01	2002-08-30
2	C3068	2000-01-01	2003-05-16
3	B1385	2000-01-01	2010-03-16
4	D5336	2000-01-01	2014-02-19
5	A8818	2000-01-02	2001-08-14
6	B3282	2000-01-02	2003-12-17
7	A3665	2000-01-02	2008-01-20
8	D2047	2000-01-02	2012-04-20

For any given month  
how many current subscriptions?

previous subscriptions + joined - left

	TheMonth	PeopleJoined	PeopleLeft	CurrentSubscriptions
1	2000-01-31	174	0	174
2	2000-02-29	329	1	502
3	2000-03-31	347	3	846
4	2000-04-30	305	1	1150
5	2000-05-31	322	3	1469
6	2000-06-30	319	8	1780
7	2000-07-31	316	8	2088
8	2000-08-31	350	7	2431

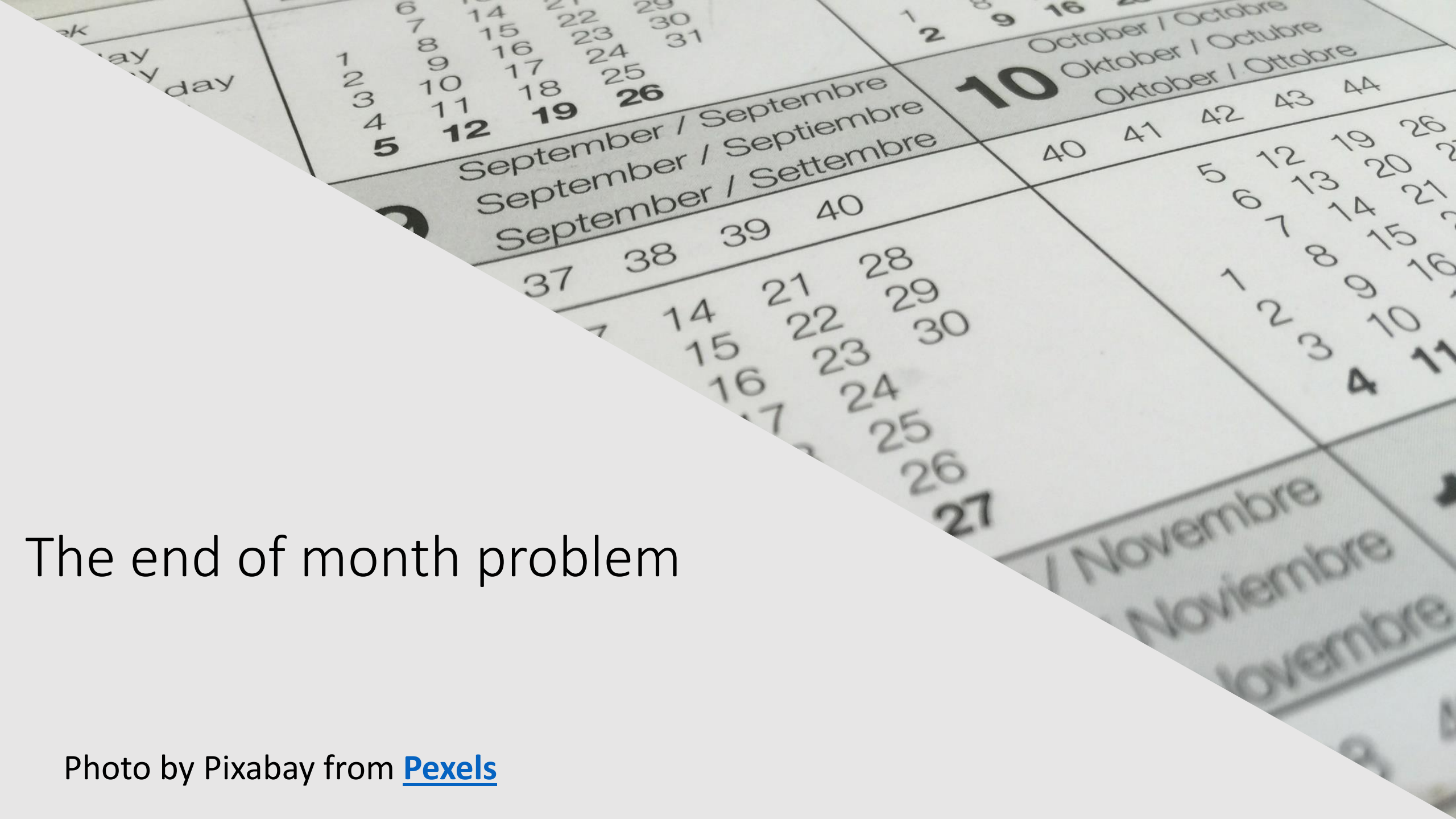
# More about running totals

New with SQL Server 2012

SUM with ORDER BY in the OVER clause

Be sure to add the FRAME!

ROWS BETWEEN UNBOUNDED PRECEDING AND CURRENT ROW



# The end of month problem



# The islands and gaps problem

Photo by Kathi Kellenberger, Punalu'u Beach

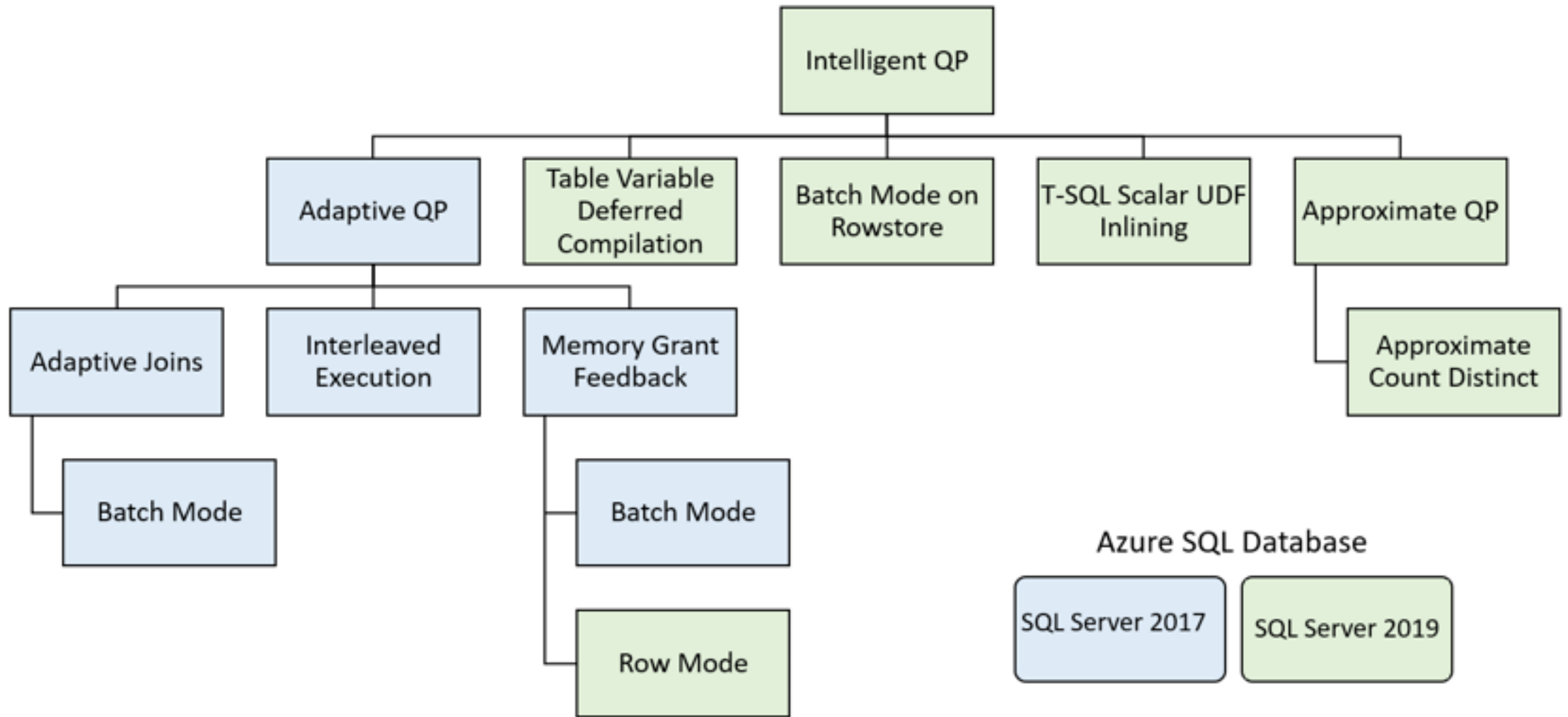


# Intelligent Query Processing

Photo by [Kaique Rocha](#) from [Pexels](#)







<https://docs.microsoft.com/en-us/sql/relational-databases/performance/intelligent-query-processing?view=sql-server-ver15>

# Resources

<https://www.red-gate.com/simple-talk/sql/performance/t-sql-window-functions-speed-phreakery/>

<https://docs.microsoft.com/en-us/sql/t-sql/functions/eomonth-transact-sql?view=sql-server-ver15>

<https://www.red-gate.com/simple-talk/sql/t-sql-programming/solving-complex-t-sql-problems-step-by-step/>

<https://docs.microsoft.com/en-us/sql/relational-databases/performance/intelligent-query-processing?view=sql-server-ver15>

<https://www.red-gate.com/simple-talk/sql/t-sql-programming/introduction-to-t-sql-window-functions/>

<https://channel9.msdn.com/Shows/Data-Exposed/SQL-Server-2019-Improves-Scalar-UDF-Performance>