AI, Machine Learning and Attribution: Practical Application in Marketing at IAG

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What is AI?

General AI is a machine that has the full cognitive function of a human being.

It doesn't exist. . .yet.

For IAG, useful, ***actually existing AI***, is. . .

When a computer can perform a task that we would typically expect to require human intelligence.

AI

USED IN MARKETING A LOT

for optimising media buys

for personalising creative

for media attribution

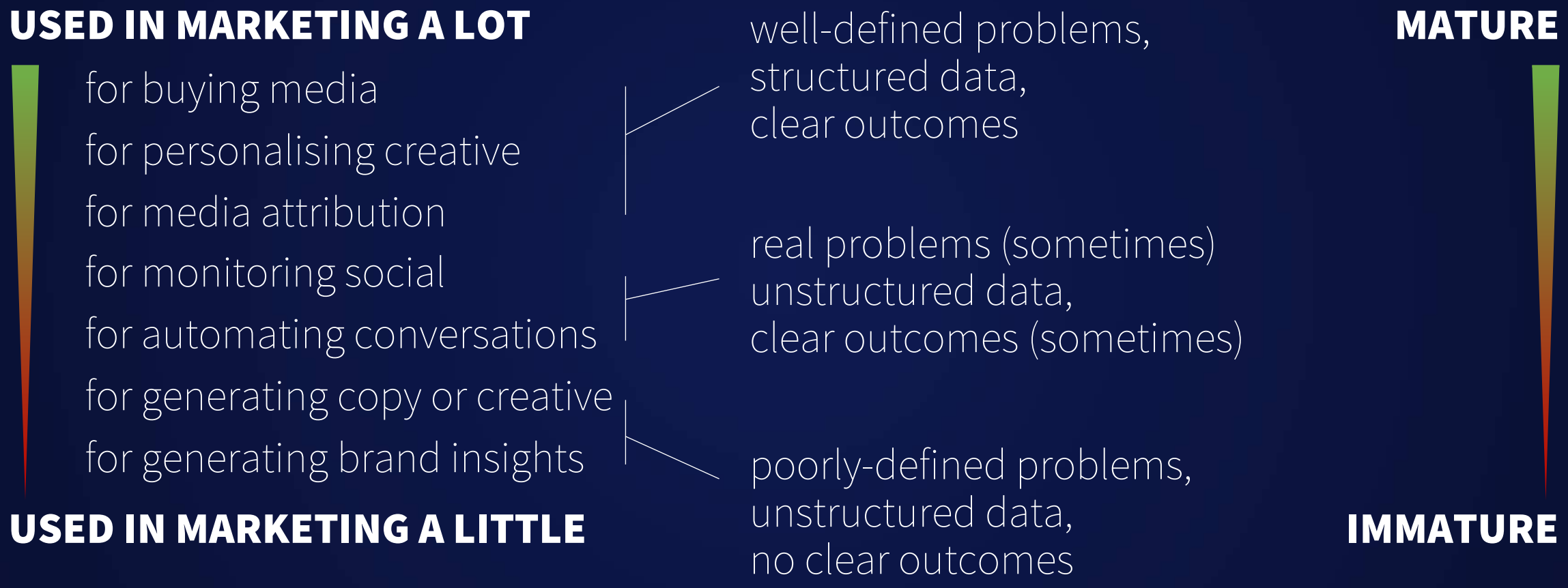
for monitoring social

for automating conversations

for generating copy or creative

for generating brand insights

USED IN MARKETING A LITTLE


USED IN MARKETING A LOT
for buying media
for personalising creative
for media attribution
for monitoring social
for automating conversations
for generating copy or creative
for generating brand insights
USED IN MARKETING A LITTLE
well-defined problems,
structured data,
clear outcomes
real problems (sometimes)
unstructured data,
clear outcomes (sometimes)
poorly-defined problems,
unstructured data,
no clear outcomes
MATURE
IMMATURE

the primary application of AI/ML in marketing has been nothing short of a **market failure**

let's discuss…

Over the last 3 years, IAG has built internal capability:

IN HOUSE ADTECH FOR SEM & PROGRAMMATIC

- ad server
- demand side platform
- search bidding platform(s)

IN-HOUSE SCIENTIFIC MARKETING ATTRIBUTION

- econometric modelling
- digital attribution
- scientific measurement design

This has built up a ***practical understanding*** of how AI and ML have been applied in marketing.

IN HOUSE ADTECH FOR SEM & PROGRAMMATIC

Looking at your own data, you start to notice there are things that don't make sense.

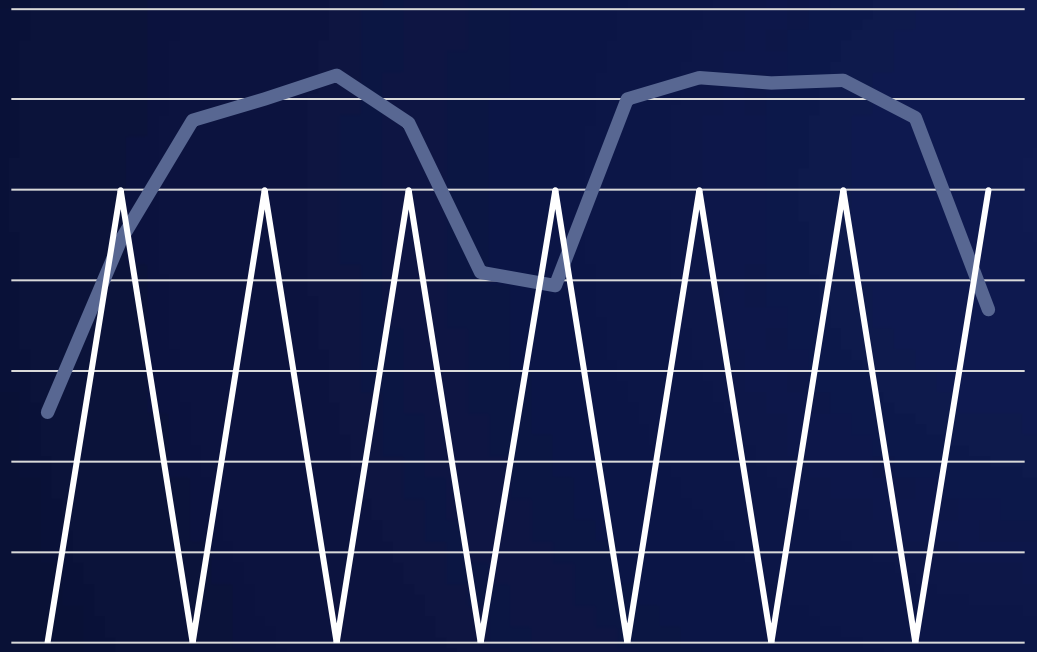
Branded search seems to get a lot of credit for *easy sales.*

Retargeting seems to get a lot of credit for *easy sales.*

Changing ***digital performance*** media mix can radically change attribution, without appearing to impact sales.

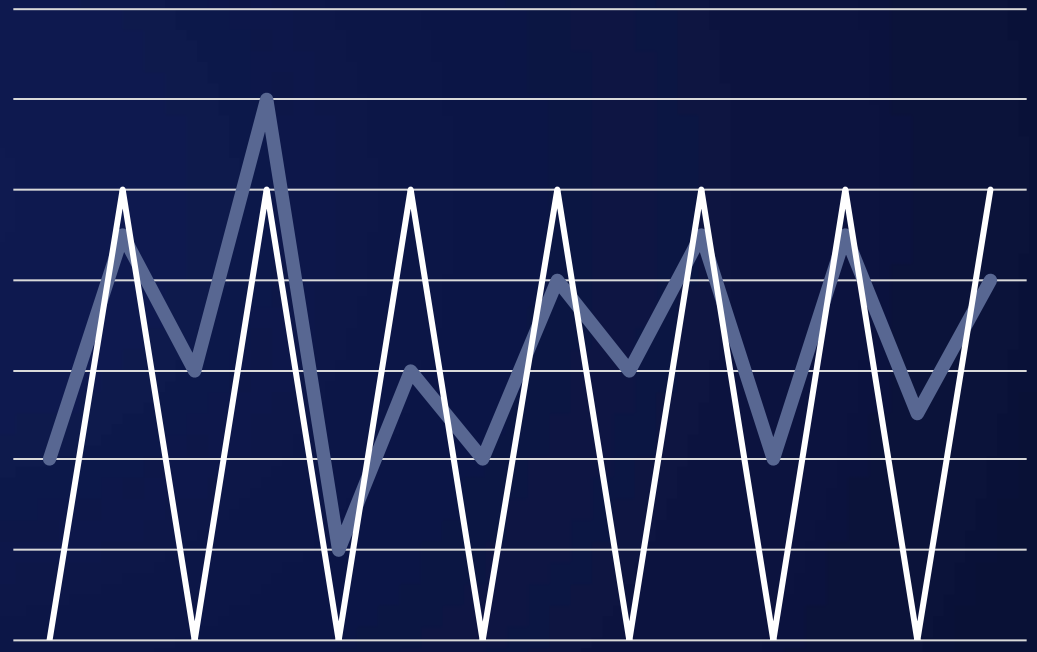
Paid Search Experiments

Branded Search



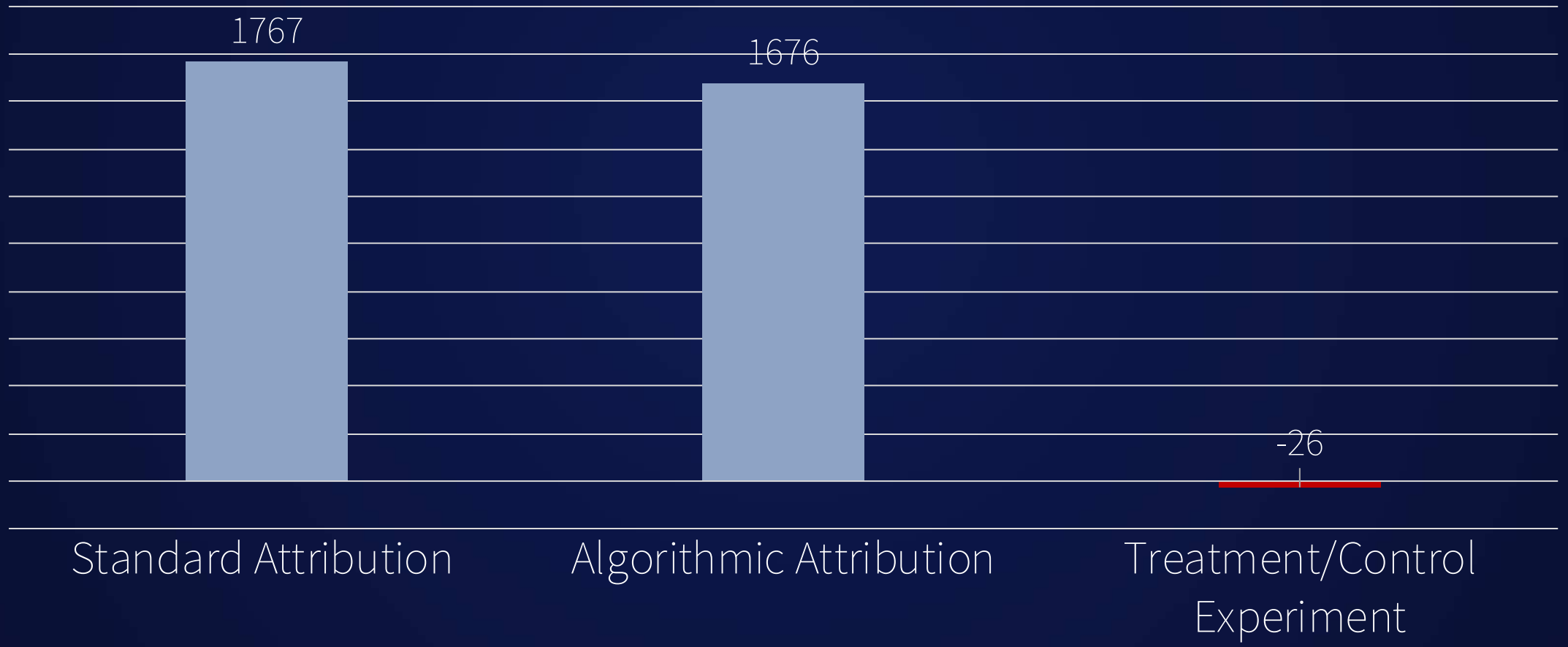
Buy Completed — Spend

Generic Search

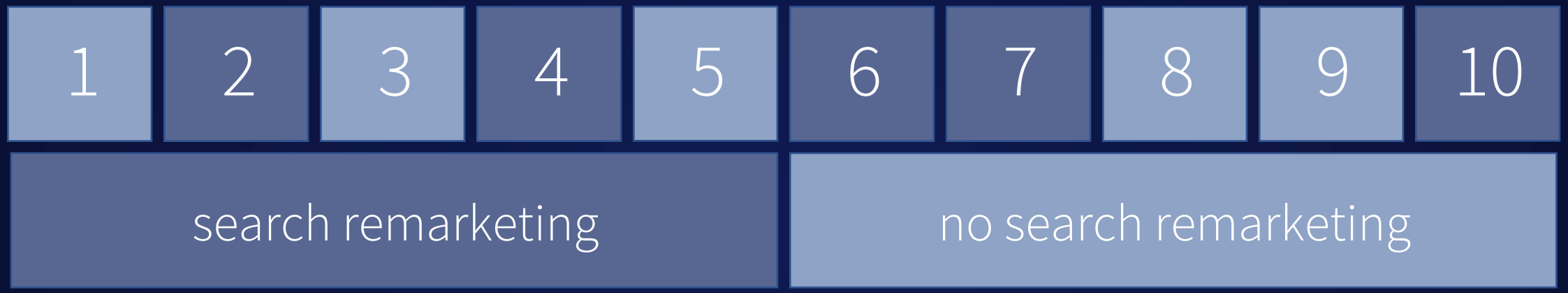


Sales — Spend

Retargeting Experiment



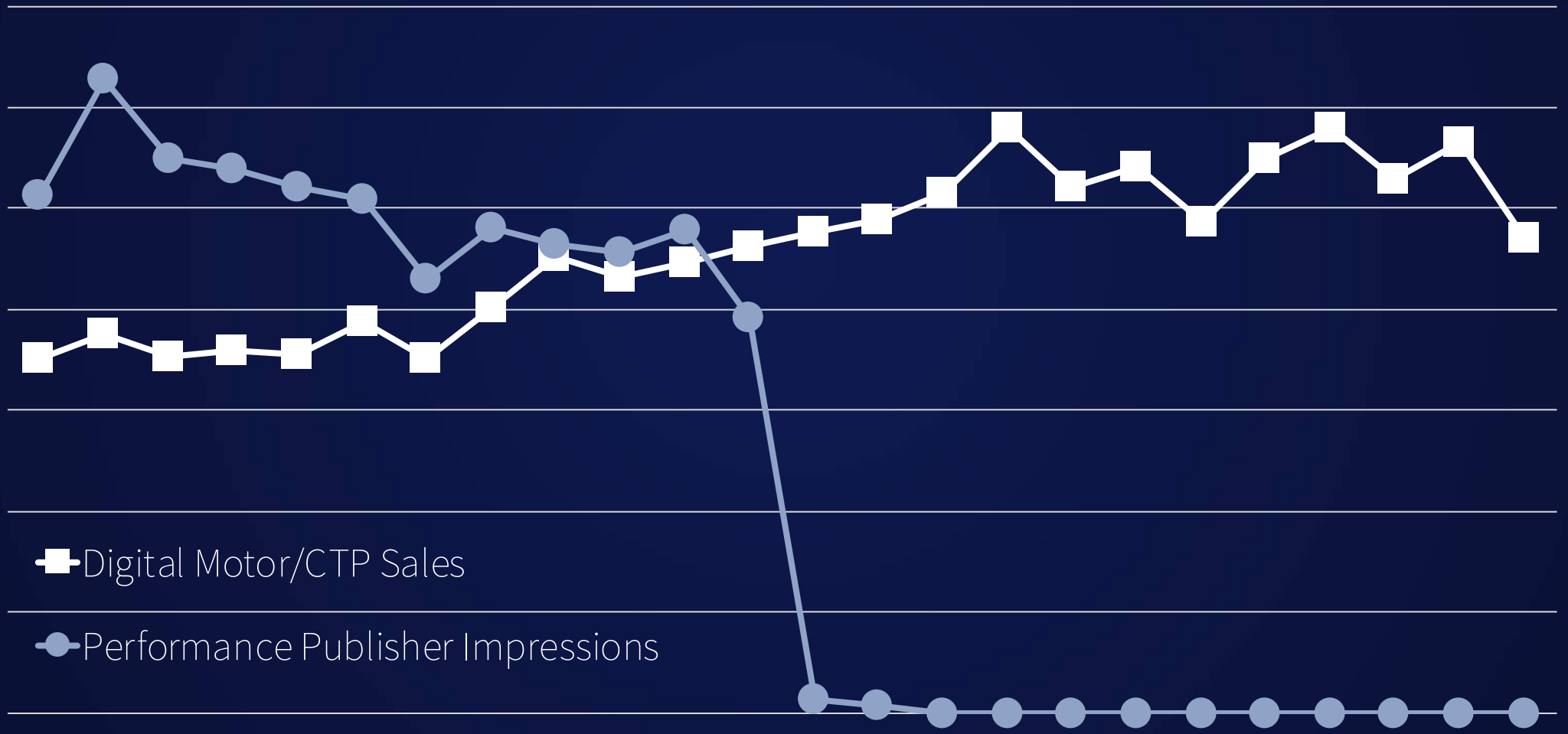
Paid Search Retargeting Experiment



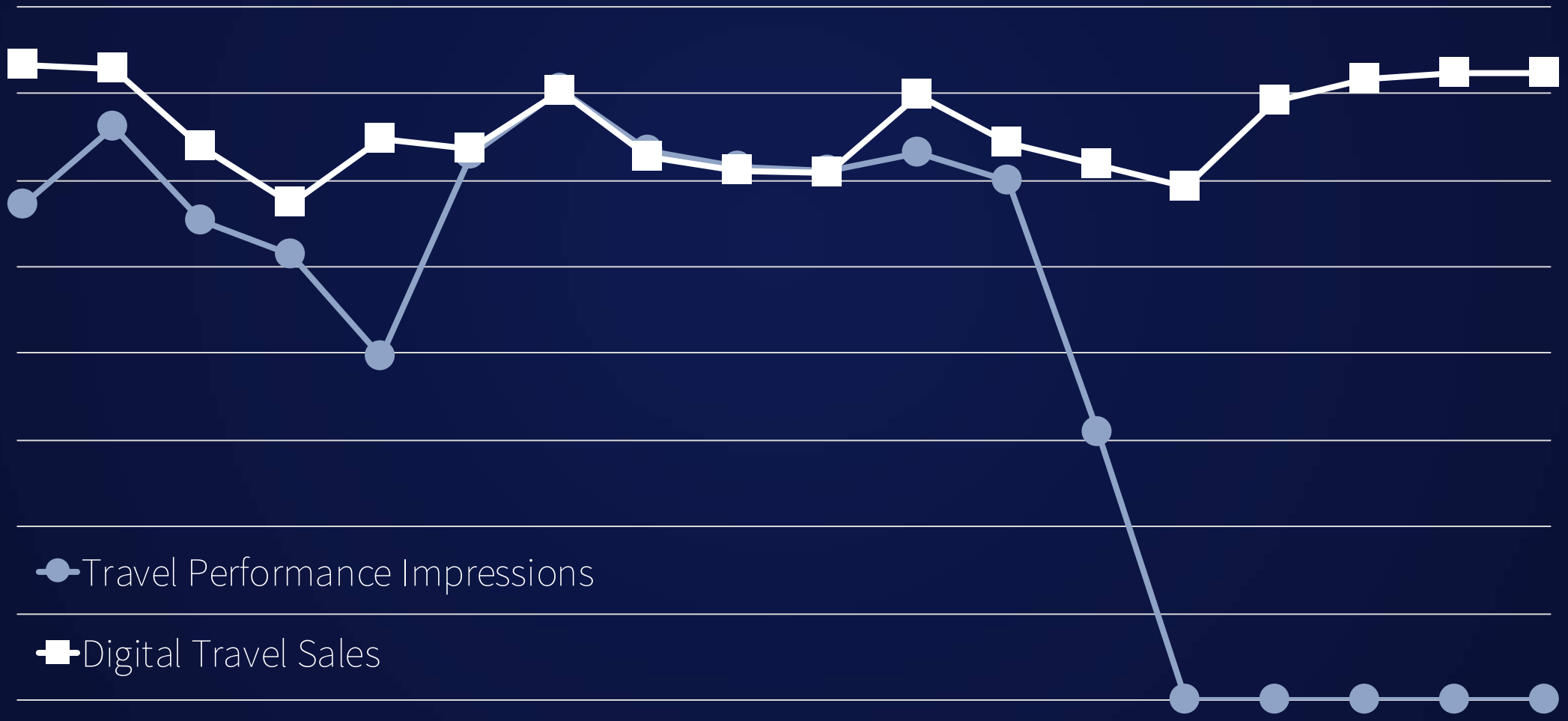
Incremental impact: –256

Share of SEM budget: ~20% → 0%

Digital Performance



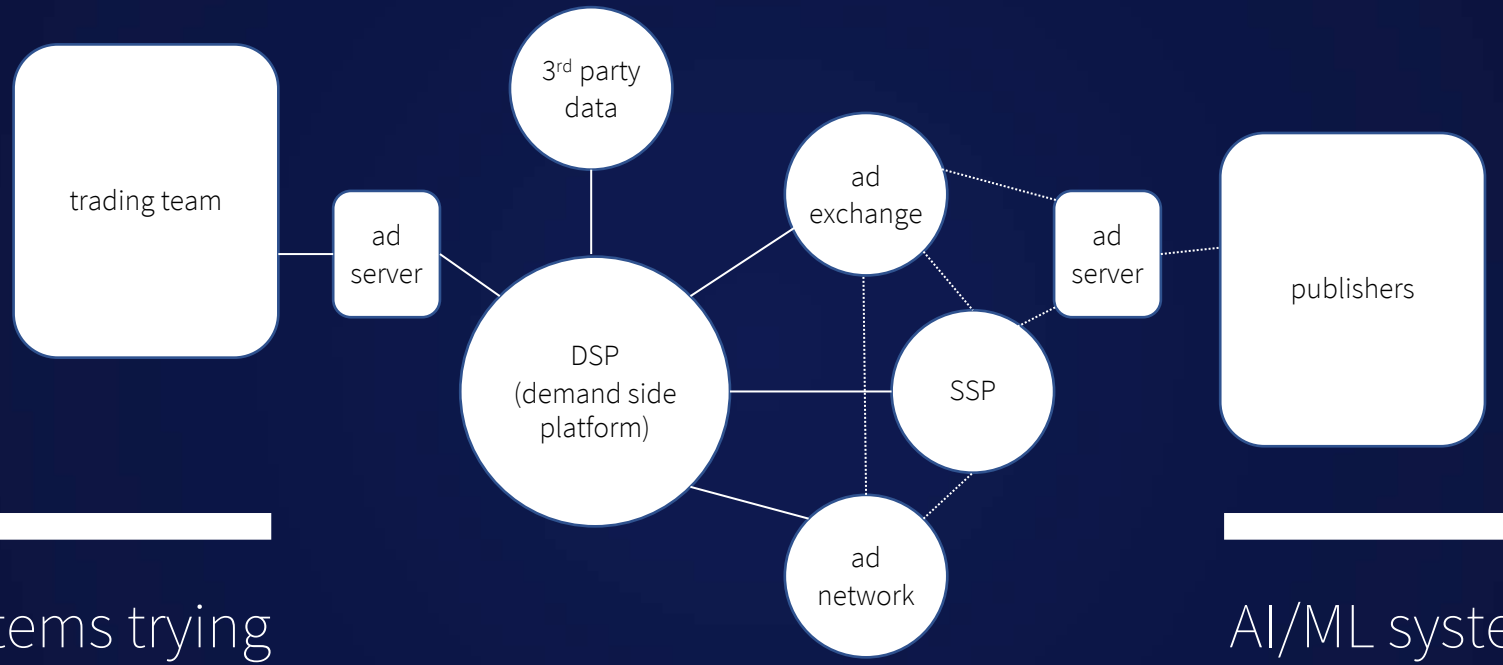
Digital Performance…again



but these campaigns were being optimised to sales using machine learning…

why are the AI/ML algorithms so far out of alignment with experiment results?

A simple view of AI/ML in performance display



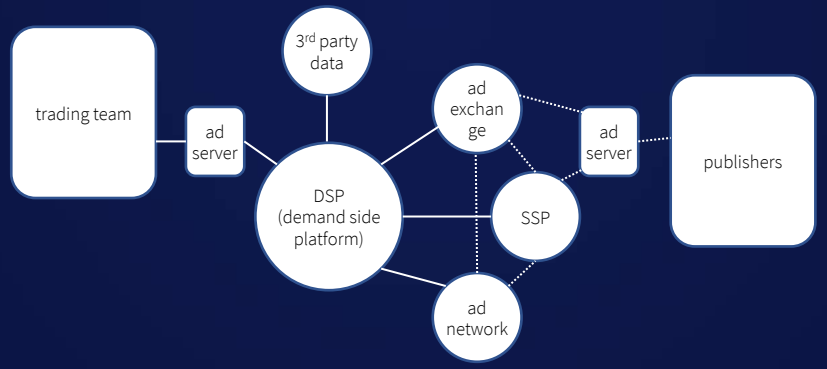
AI/ML systems trying to maximise sales delivered for minimum spend

AI/ML systems trying to maximise money received for ads

AI/ML systems trying to maximise sales delivered for minimum spend

Marketer sets a goal

AI system learns to optimise to that goal within the programmatic ecosystem



Advertising is delivered to the world

AI system refines approach with knowledge of results

Marketer benefits from delivery of goal

assuming marketing can change people's buying behaviour, these scenarios are possible

behaviour	without marketing	with marketing	effect of marketing
complier	don't buy	buy	POSITIVE
never taker	don't buy	don't buy	NEUTRAL
always taker	buy	buy	NEUTRAL
defier	buy	don't buy	NEGATIVE

AI/ML systems trying to maximise sales delivered for minimum spend

Standard Last Interaction Attribution

Look back 30 days for a click.
If found, credit to most recent click.

If not found, look back 14 days for an impression.
If found, credit to most recent impression.

if our goal is sales according to standard last interaction attribution, which behaviour are we optimising for?

behaviour	without marketing	with marketing	effect of marketing
complier	don't buy	buy	POSITIVE
never taker	don't buy	don't buy	NEUTRAL
always taker	buy	buy	NEUTRAL
defier	buy	don't buy	NEGATIVE

we are optimising for *always takers* with no regard for avoiding *defier* behaviour.

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this is nothing short of a market failure

market failures are often attributable to *bounded rationality* – that rational decision-making is limited, and it is common for decision makers to seek reasoning shortcuts

the use of an attribution approach that assigns value without regard to whether it actually delivered incremental value represents a severe reasoning shortcut

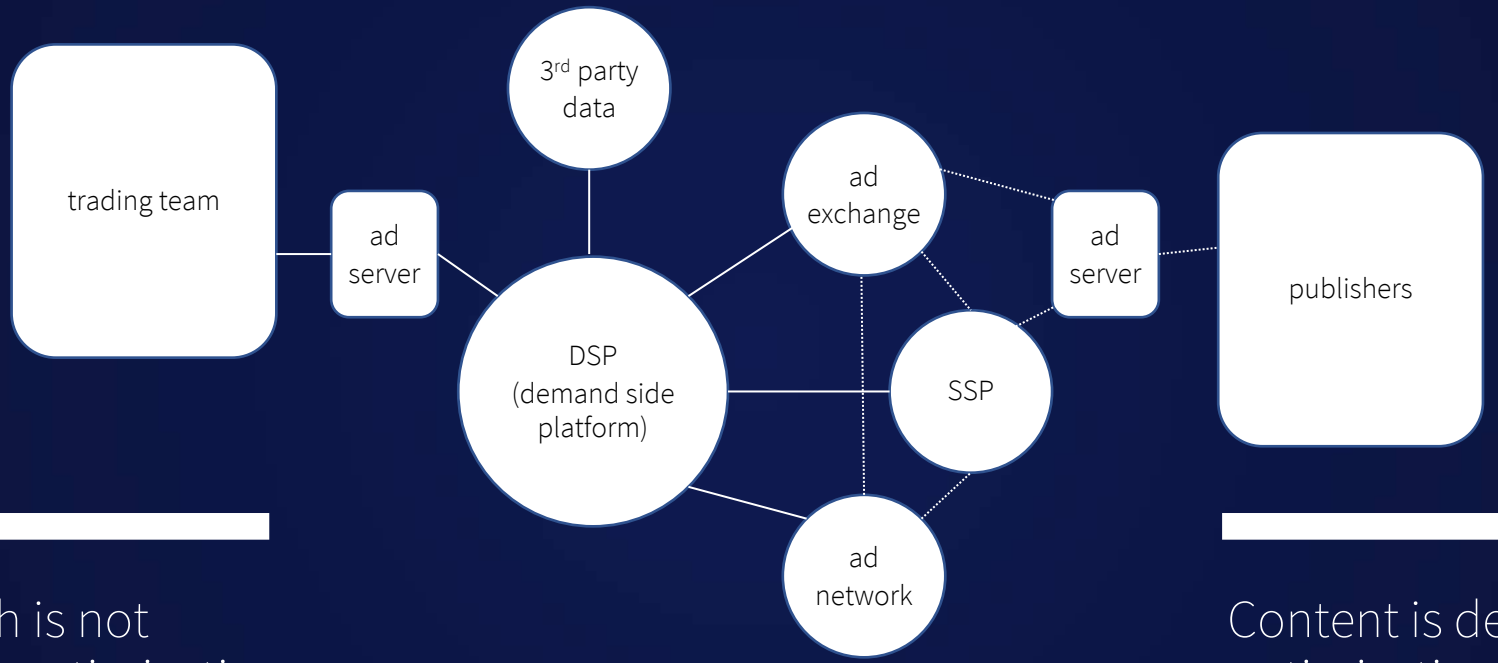
buyers and sellers both lose

optimisation is done without differentiating impressions, including unviewable impressions

no incentive to develop memorable digital ads that people connect to

MRECs and tiny self-refreshing ad units valued the same as high impact placements that are more likely to be noticed

placements on poor quality listicles valued in the same was as high quality journalism



Sales growth is not delivered as optimisation is naïve to the effect of marketing

Content is devalued as optimisation is naïve to context

that is a terrible case

it is the primary application of AI/ML in marketing

we should embrace its death as google/apple/firefox kill the enabling third party cookies

now some good cases…

Engaging with science in marketing at IAG…

In 2015, IAG embarked on a very strong engagement with science.

IAG bought Ambiata – a NICTA start-up built by CSIRO and Data61 scientists.

Through Ambiata, IAG had a chief scientist, Tiberio Caetano, an adjunct professor in machine learning at UNSW and his brilliant then PhD candidate, Dr. Finn Lattimore.

And a new CMO in Brent Smart who was willing to back us in asking difficult questions of digital marketing, econometrics and attribution.

Propensity Modelling

A purchase propensity model identifies people who are most likely to buy your product.

This will typically use a combination of your first party behavioural data, and DSP or publisher data.

Uplift Modelling

An purchase uplift model identifies people who are most likely to increase their propensity to buy your product if they are subject to advertising.

This can use the same data as the propensity model. But the advertising is an additional input to the model.

what would a system look like if it were optimised to the right goal?

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what would a system look like if it were optimised to the right goal?

Optimise for this!

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Not this!

Propensity Modelling

A purchase propensity model identifies people who are most likely to buy your product.

This will typically use a combination of your first party behavioural data, and DSP or publisher data.

goal is to claim credit for sales

find the always-takers (and defiers)

Uplift Modelling

A purchase uplift model identifies people who are most likely to increase their propensity to buy your product if they are subject to advertising.

This can use the same data as the propensity model. But the advertising is an additional input to the model.

goal is to increase sales

this is an established direct marketing technique c. 1999

With propensity modelling (ie the standard attribution goal), we can optimise CPA without proper ads

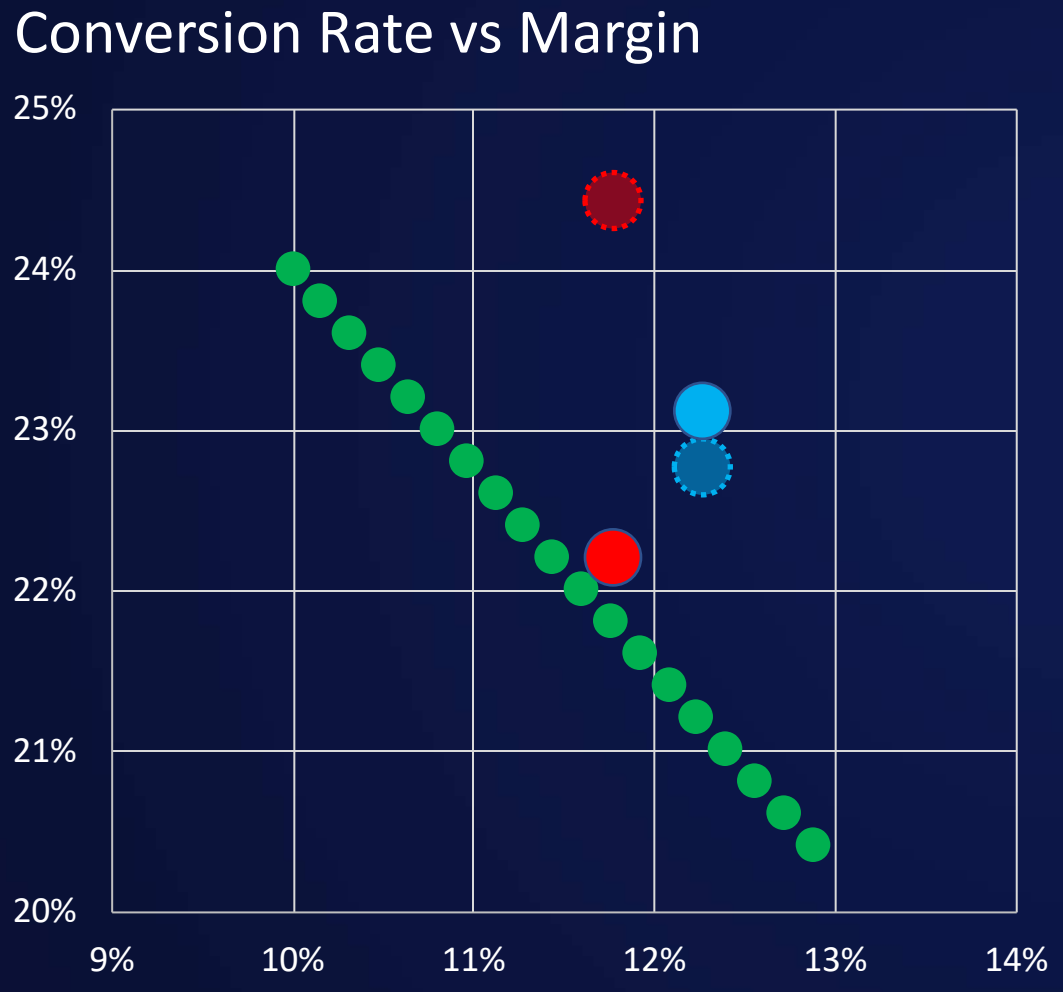
and the best part is. . .they don't even need to be viewable!

Uplift Modelling is for…

Performance campaigns run through:

- Any demand-side platform (DSP)
- Any search bidding platform
- Any standalone performance platform (e.g. Facebook)
- Direct marketing
  (implementations exist, but are rare, e.g. Pitney Bowes)
- Any many other things…

We have applied direct marketing uplift techniques to pricing



Standard Revenue Management

- Estimate: +10%
- Observed: +1%

Uplift Modeling (direct marketing method)

- Estimate: +2%
- Observed: +2.5%

results c/o pricing modernisation programme led by IAG Director of AI, Dr Dimitri Semenovich

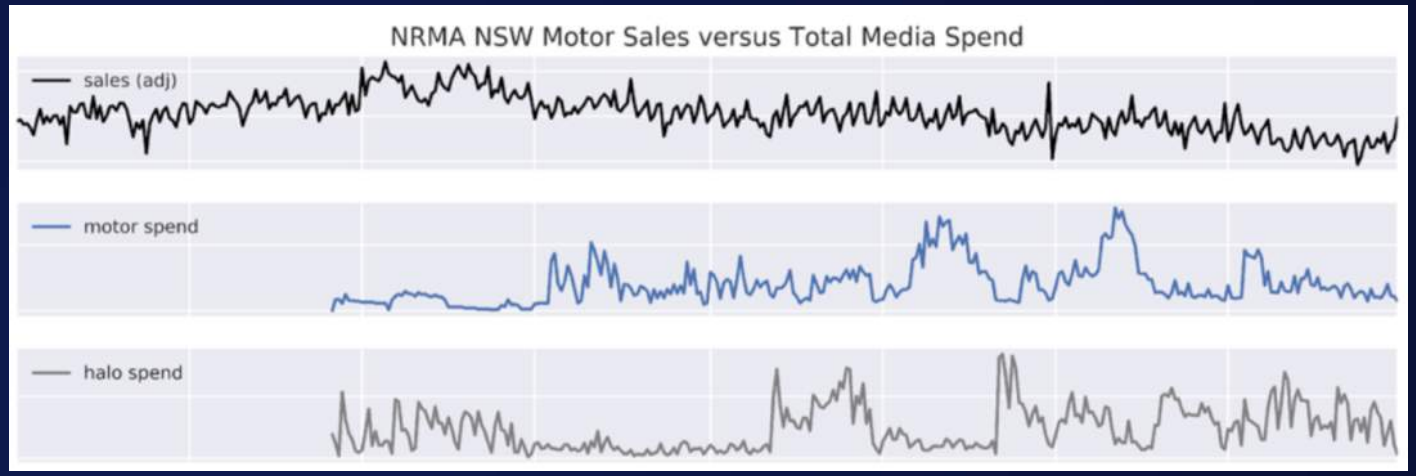
AI for Econometrics

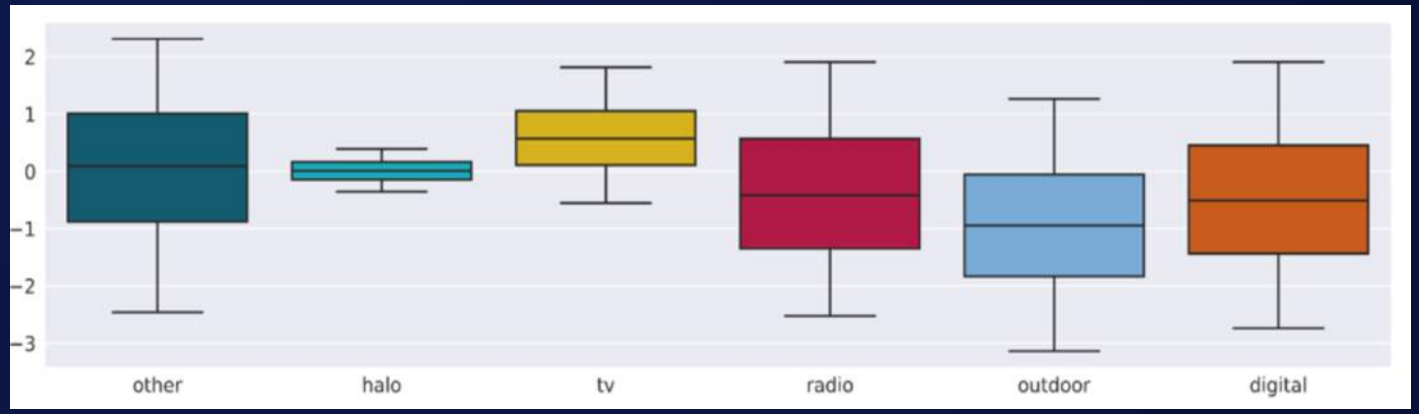
Typical econometric output – a single coefficient per channel

Our ML system automated generation of 250,000 viable models (0.7 < R^2 < 0.8) and 250,000 coefficients

This gives us a read on the range of possibilities and a sense of causality.

For us…most ATL advertising channels don't sell our insurance in the short term.





What is different about the good cases?

Clear understanding of the problem.
AI/ML developed specifically to resolve the problem.

When is AI a good idea in marketing?

When should we hand over responsibility to a machine?

When the task is clear.

If we all knew last-touch attribution to be flawed, why would we hand over optimisation to a machine on that basis?

When we understand the system.

If we don’t understand what the AI is doing, how can we be confident it is serving us?

AI in the wider marketing context…

A stronger understanding of AI for marketing at IAG has led to a more pointed focus for AI/ML applications in marketing, and a stronger conviction in our focus on brand advertising.

We must understand AI and brand science and develop a holistic approach…not AI replacing brand science.

The science of brand advertising has a long history…
and marketers can usefully re-engage with this history.

But that’s another story…