



Actuaries working in Airline Frequent Flyer Programme: Pricing and Valuation for Miles

Asian Actuarial Conference 2024

24 October 2024



If you have 100,000 miles in Cathay account





Singapore



Osaka



Barcelona



How to earn 100,000 miles





About your speaker



EDUCATION AND QUALIFICATION

BBA in Insurance, Financial and Actuarial Analysis
The Chinese University of Hong Kong

FSA

MSc in Psychology
The University of Glasgow

TRADITIONAL AND NON-TRADITIONAL EXPERIENCE

Consulting actuary

- Solvency II
- IFRS 17
- C-ROSS
- Reserve audit
- PROPHET
- AXIS

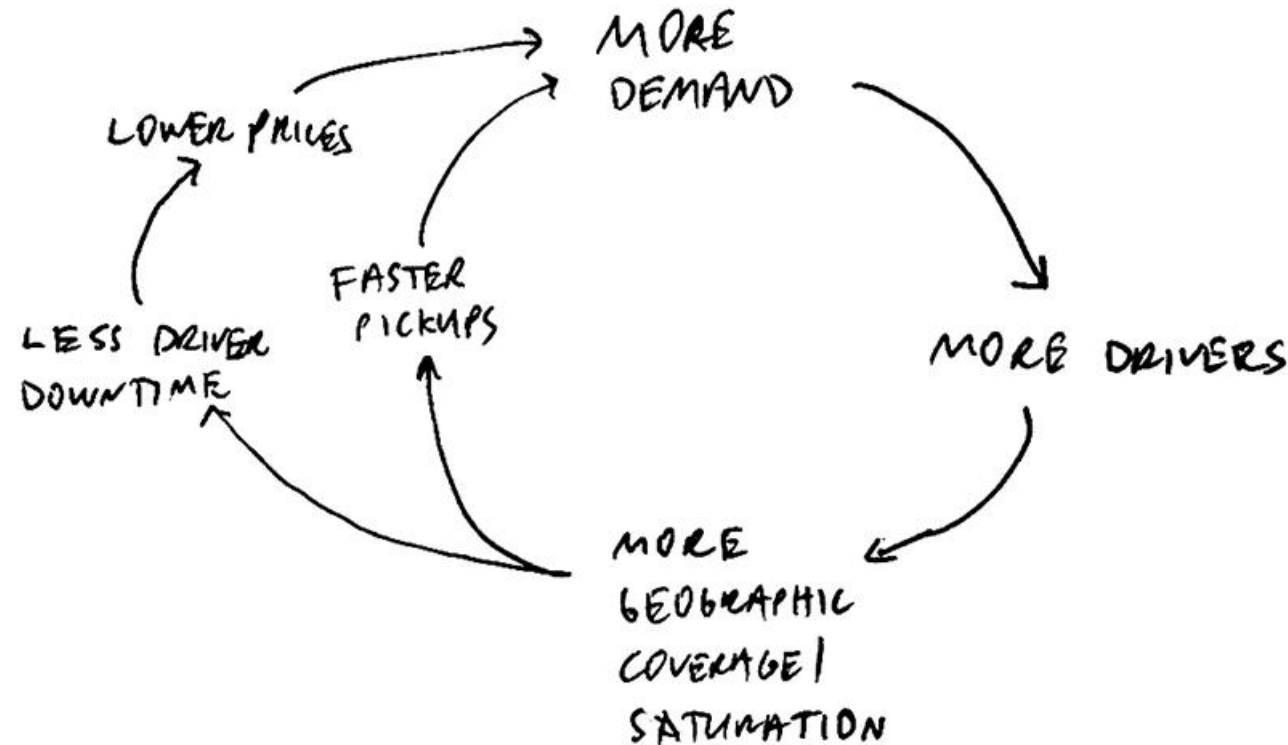
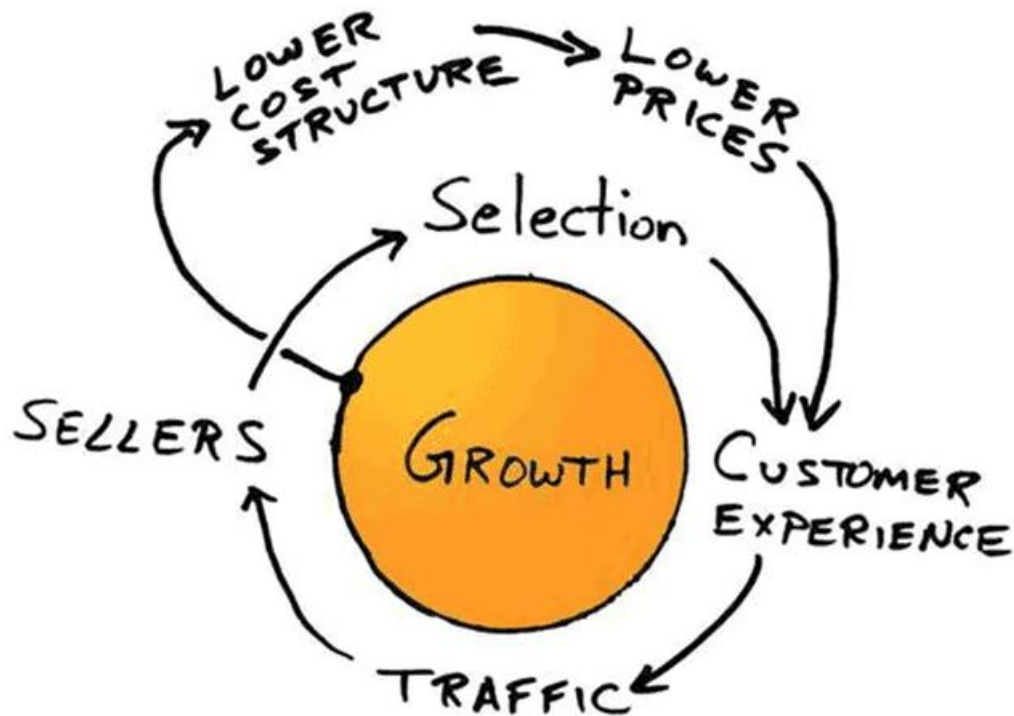
Reinsurance pricing actuary

- Cancer overdiagnosis risk
- Business steering
- CI definition risk assessment
- IF transactions
- NB quotations
- Lifestyle product development

Programme actuary

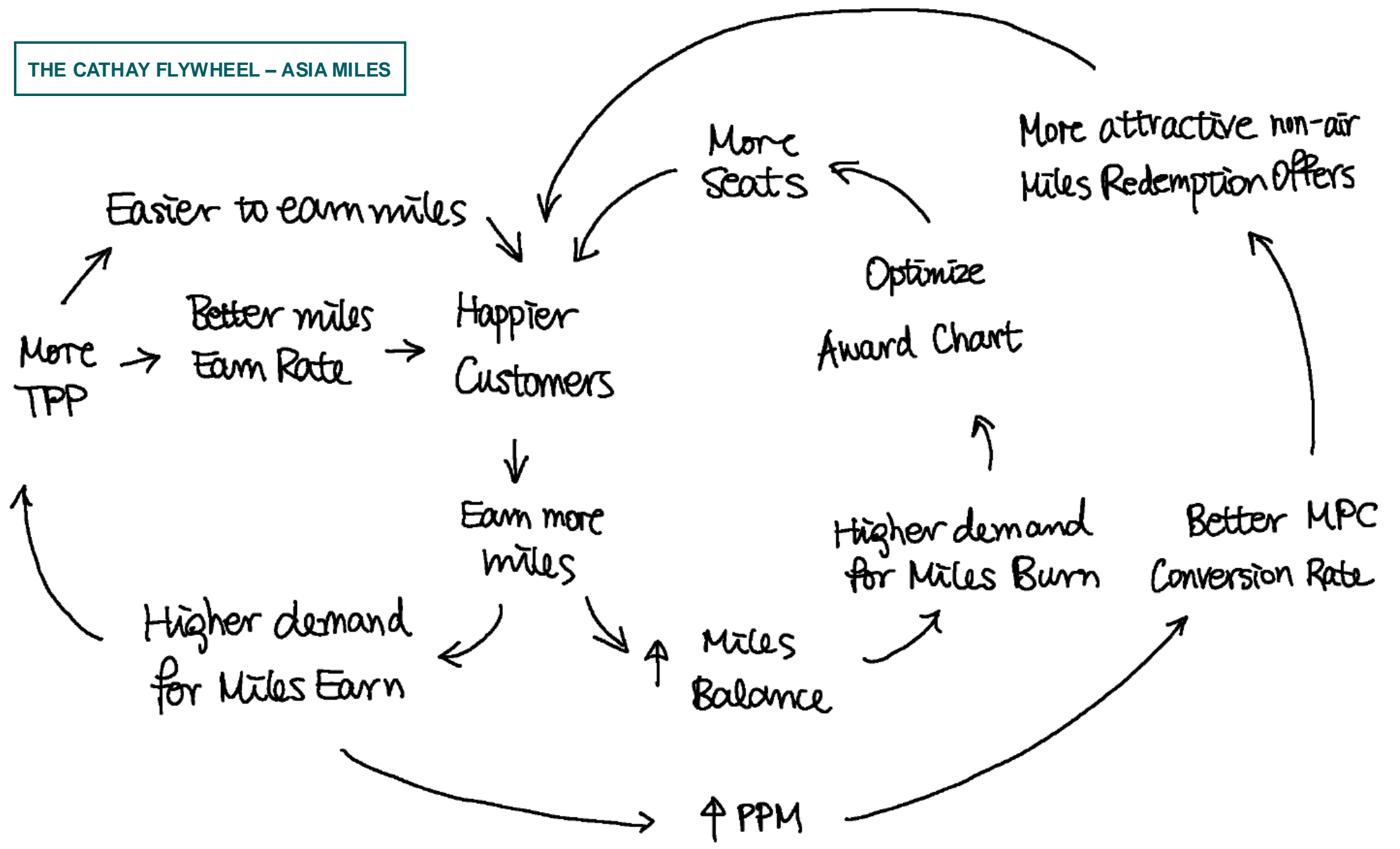
- Breakage
- Fair value
- Liability
- IFRS 15
- Customer lifetime value
- Pricing frameworks - incentive

Constructing strategy flywheels



Amazon (left) sketched by Jeff Bezos in 2001; Uber (right) sketched by David Sacks in 2014

THE CATHAY FLYWHEEL – ASIA MILES



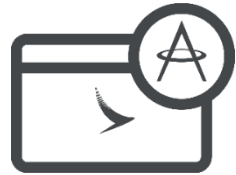


Fun Fact Sharing Time!

Managing a desirable currency – 5 strategic pillars



**Attractive
Value**



**Easy to
Earn**



**Easy to
Use**



**Balanced
Growth**



**Manage
Breakage**



How does a desirable currency contribute to the airline?



Yield Margin

This includes the margin on mileage sales in non-air pillars and the CX yield premium on flight tickets.

The cash that the program sets aside to provide working capital and liquidity for the airline group.

Working Capital

Breakage Income

Not all miles earned are redeemed. The miles earned which are never redeemed is known as breakage.



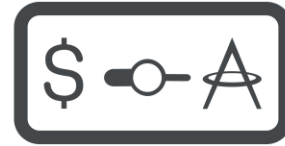
Value of 1 Asia Mile

?

What is the value of miles?



Comparing the flight redemption award chart and the flight ticket prices



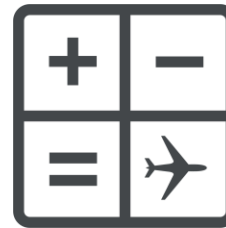
MPC conversion rate: the exchange rate between cash and miles



When and where are our members earning and burning miles?



Comparing the miles earn rate and the cash rebate offered by credit cards



4-way trade: when our members earn or burn on partner airline; vice versa



Perceived value of points from competitor loyalty programmes or FFP



Standalone Selling Price of Mile



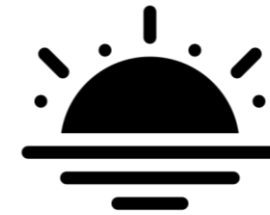
- **Observability:** If the standalone selling price of mile is not observable, it should be estimated by maximizing the use of observable inputs.
- **Willingness to pay:** The price at which the airline would sell a promised good or service separately to a customer.

Earned Breakage Assumption



- **Historical experience:** The best practice in the industry adopts predictive analytics approach leveraging historical data.
- **Contractual right:** Customer has a right to receive a good or service in the future. Unexercised rights are known as breakage.

Timing of Revenue Recognition



- **Performance obligation:** Airline recognize a contractual liability to stand ready to transfer goods or services in the future.
- **Timing:** If breakage is expected, it should be recognized in proportion to the pattern of rights exercised by the customer.



Fun Fact Sharing Time!

What actuaries do in Airline FFP?



Liability

Mileage balance management is critical to the sustainability of FFP which can be achieved via strategic earn burn proposition.



Breakage

Although mileage expiry may create profit for the airline, from long term perspective it is more favorable to secure engagement.



Pricing

Experimenting the various pricing methodologies is the direction to optimize MPC conversion rates across products.



CLV

Customer Lifetime Value calculates expected future profit of member at individual level for decision making.

1. Liability



- Deferred revenue
- Future redemption costs
- Earn-Burn ratio & velocity
- Miles balance growth

Liability

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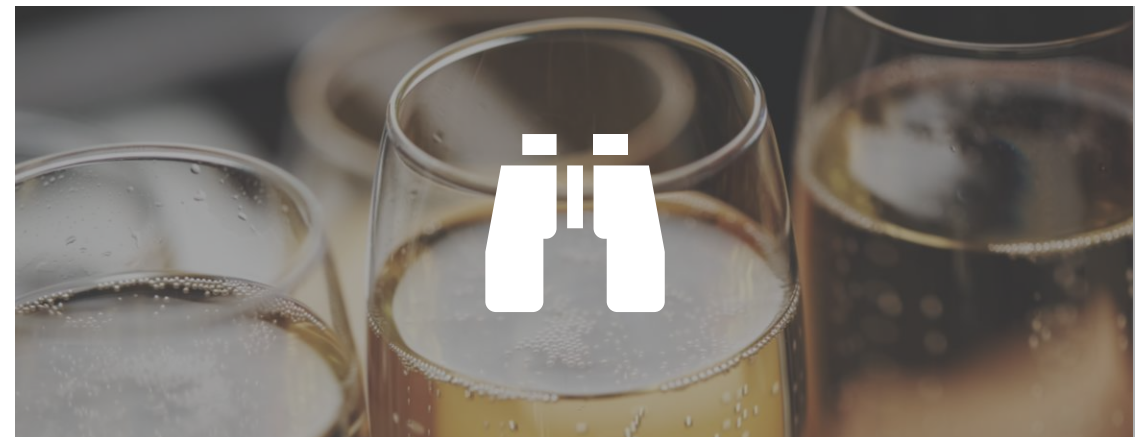
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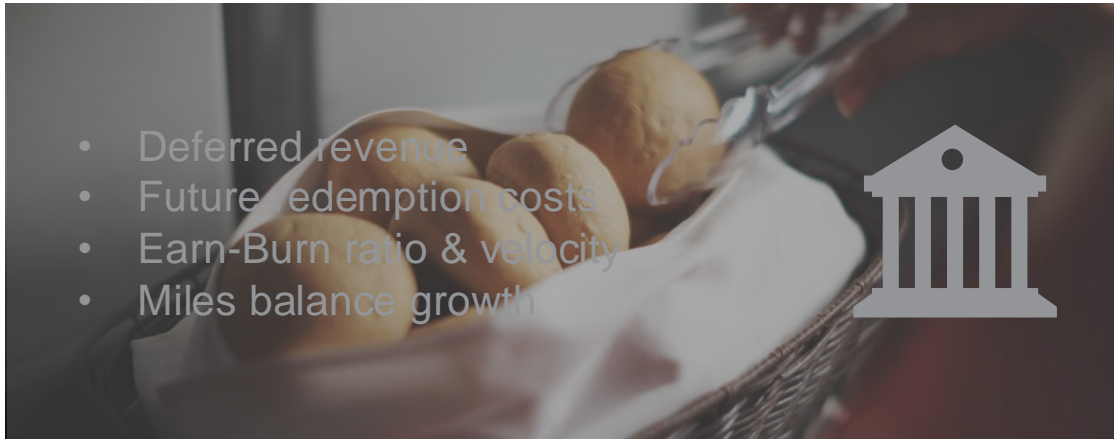
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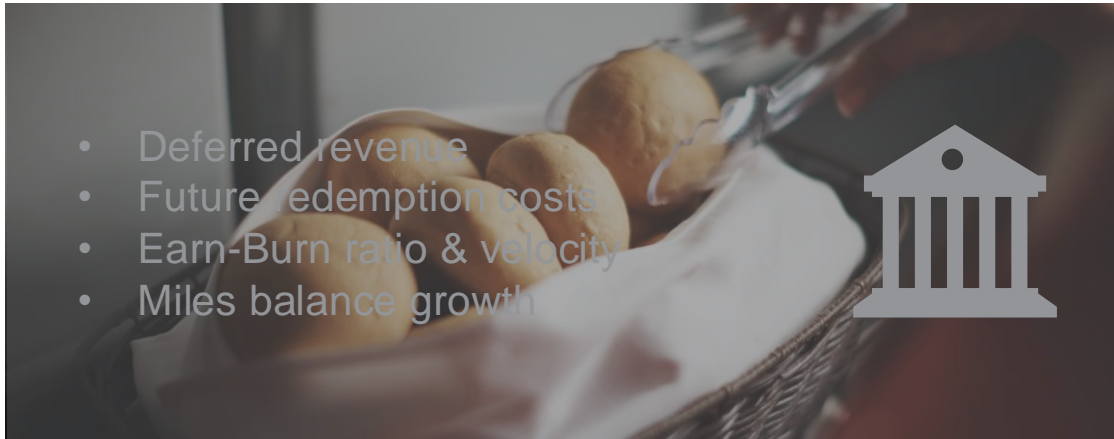
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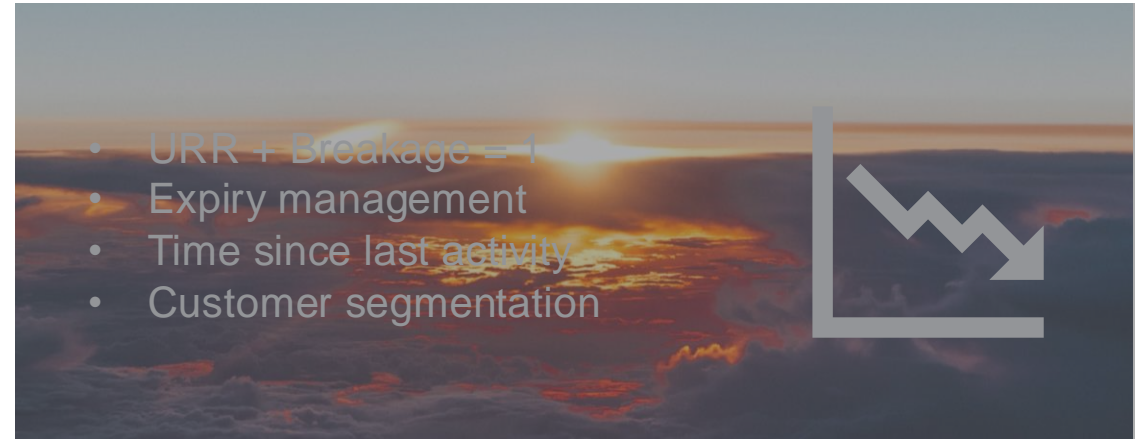
3. Pricing



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- Future redemption costs
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Liability

Mileage balance management is critical to the sustainability of FFP which can be achieved via strategic earn burn proposition.



- $URR + \text{Breakage} = 1$
- Expiry management
- Time since last activity
- Customer segmentation

Breakage

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- MPC conversion rate
- Burn diversification
- Currency value index
- Pricing governance – incentives

Pricing

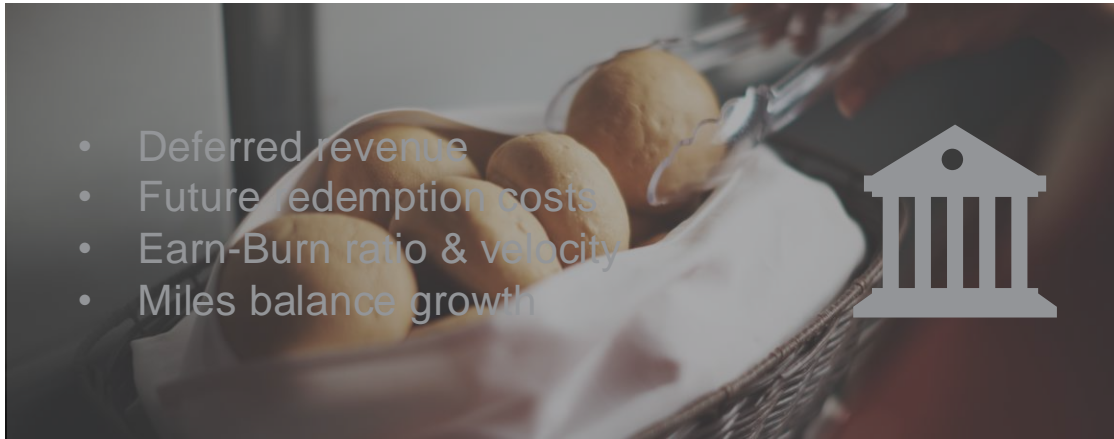
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4. Customer Lifetime Value

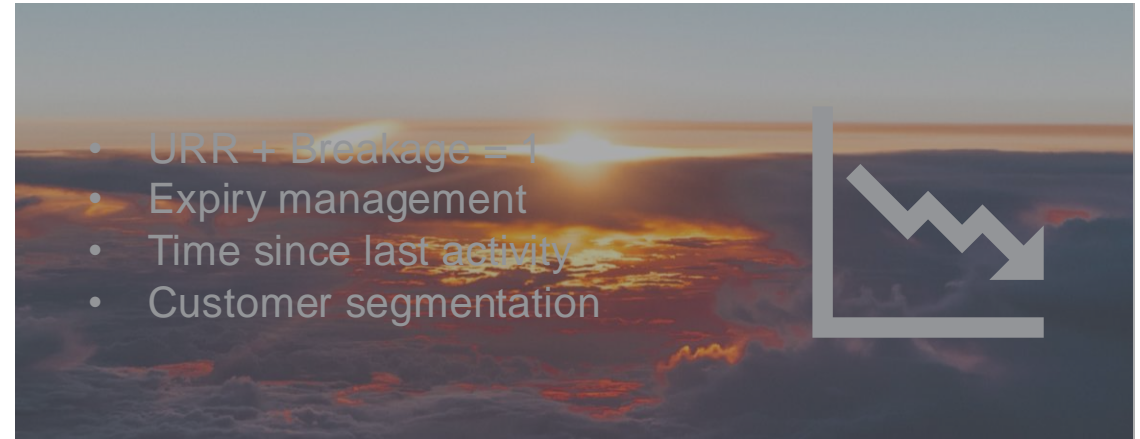


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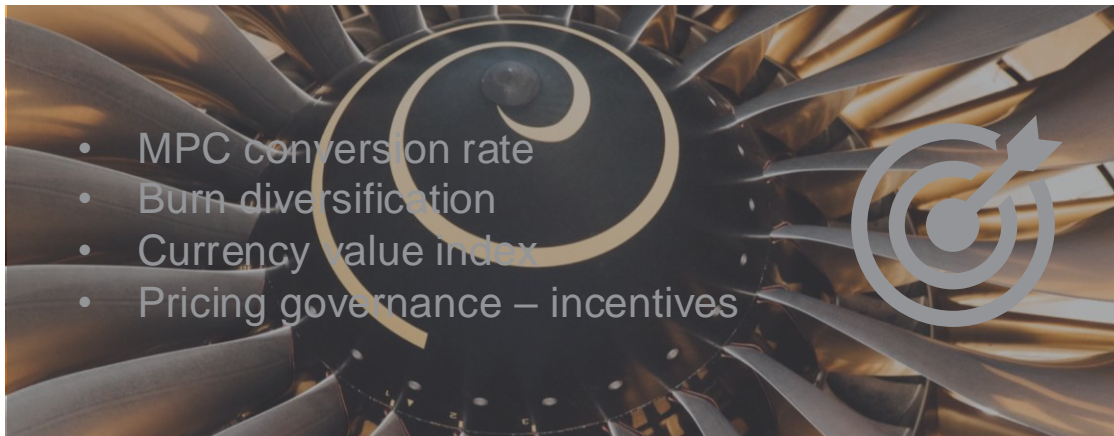


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- Expected future profit
- Golden timing after redemption
- Member life stage changes
- Pareto principle



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Fun Fact Sharing Time!

Should the next seat on flight be sold or redeemed?



Problem Statement

How many of the available seats on a certain flight should be released as redemption awards?

Airline Glossary

ASK

Available Seat Kilometres

SUPPLY

RPK

Revenue Passenger
Kilometres

DEMAND

Load Factor

FULL?

Redemption ASK/RPK

True Cost of a Seat

MARGINAL

- Inflight meal
- Baggage
- Alcoholic/Non-alcoholic drinks

DISPLACEMENT

The opportunity cost when a passenger is occupying a seat using an award ticket that could have been sold to a fare-paying passenger. *

DILUTION

A passenger elects to use an award ticket instead of purchasing a regular ticket. *

Risk Management

One lesson learnt from the pandemic for all the airlines is mileage business can be a sustainable source of income. Both revenue management and member satisfaction must thrive for long term growth.

Research Study

Regular market study on miles value inform decision making on redemption seat availability as it quantifies member willingness to pay for flight ticket due to the attractiveness of Asia Miles and membership benefits.

Competitor Benchmarking



British Airways has award seat guarantee, ranging between 12 to 14 award seats per flight.



The largest 3 US airlines have all adopted dynamic pricing for the flight redemption awards.

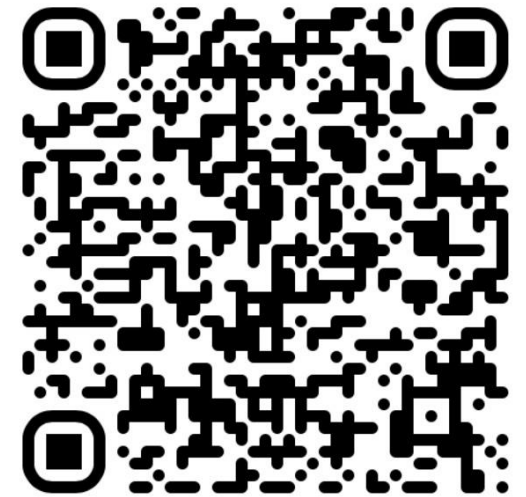
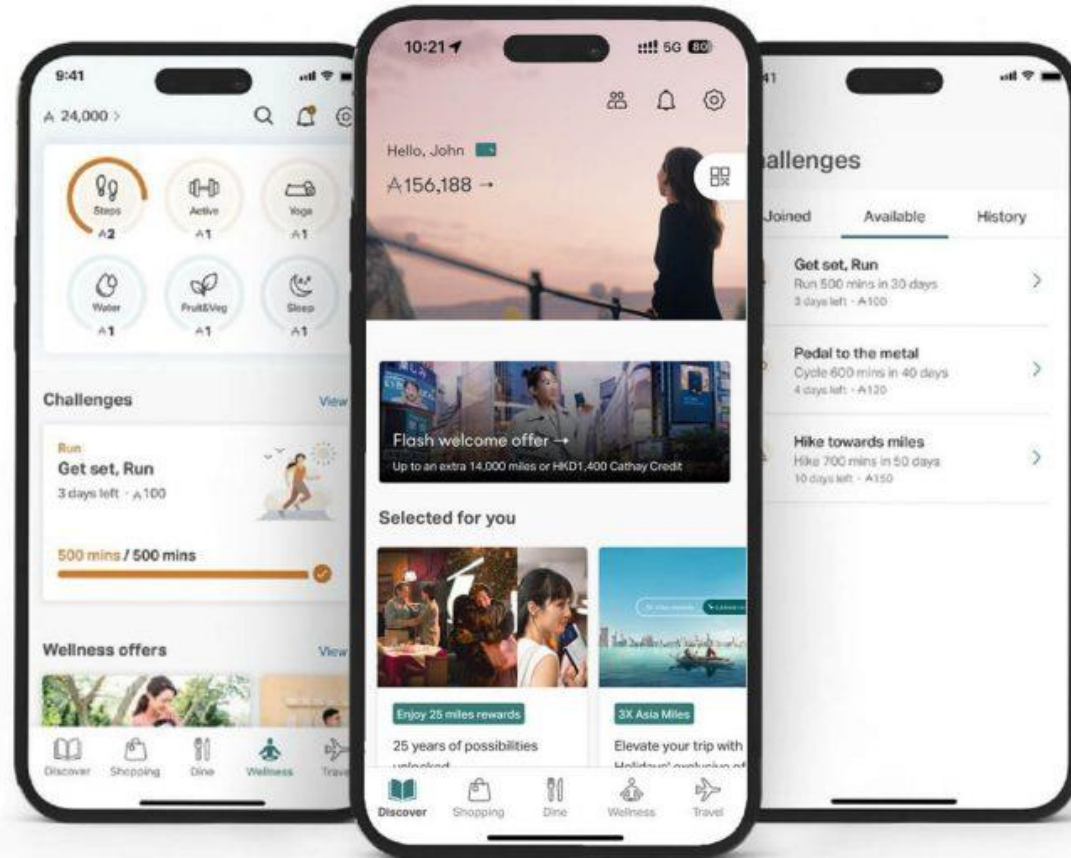


Takeaway

”Actuarial skills are transferrable beyond insurance”



The Asia Miles by Cathay app





Q&A