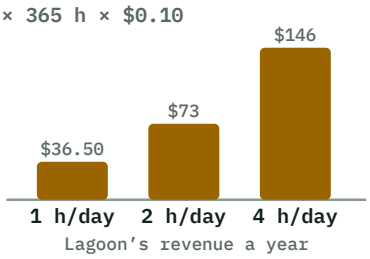
Is your data the price?

A free app is paid for by advertisers, who buy your attention by the hour; your data makes each hour worth more to them. What “free” is worth, why aimed ads pay more, what privacy costs, and the real cases. Question 4 of the ten to ask about any app.

1 The price of free

hours of attention

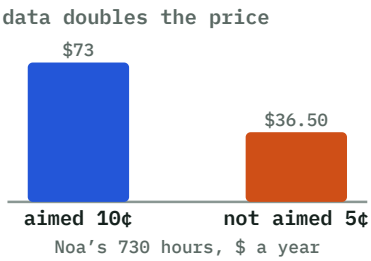
- **Lagoon** = free social app on **Coralia** (toy island) · **Noa** = user, never pays
- **Attention** = time spent looking at a screen → advertisers pay for a share of it
- Noa: `2 h × 365 = 730 h` a year · `730 × $0.10 = $73` → **10 ¢ an hour**
- Subscription (fee paid monthly) instead of ads: `$73 ÷ 12 ≈ $6` a month
- More hours → more money · `4 h/day → 1,460 h → $146`
- Practice **Reef** video app, 20 ¢/h: `2 h/day → $146` · `4 h/day → $292` (2 × hours ⇒ 2 × $)



2 Data raises the price

aimed ads

- **Data** = facts an app records about you: what you watch, follow, tap, buy
- **Aimed ad** → shown to people more likely to buy → each view worth **more** (skateboard ad → skaters)
- Data **not sold** → **used** to choose who sees which ad
- Lagoon: aimed `10 ¢/h → $73` · not aimed `5 ¢/h → $36.50` ⇒ data worth **$36.50** a year
- Practice: rule “ask before tracking”, most say no → Reef `20 ¢ → 10 ¢` · `$146 → $73` per user · 1 m users `$146 m → $73 m` → more ads, a fee, or less money



3 The chain of free

who pays

- App learns what Noa likes → ad **aimed** → advertiser pays **more** per view → app stays **free** → Noa pays with **attention and data** (no bill)
- **Two-sided market** (Lesson 1) = serves users + advertisers → advertisers pay the money · many people pick free: no money, only attention and data
- Practice **ad-free plan** $10/month = `$120` a year · Teo’s ads `$146 ÷ 12 ≈ $12`/month → plan `−$26` for Reef · Ivy, 1 h/day, ads `$73` → plan `+$47` ⇒ heavy users worth more on ads
- Sort: `MONEY` paid music plan, no ads · loaf in cash `ATTENTION + DATA` free map app · free photo app `BOTH` paid news site with aimed ads · $5 film plan with ads

4 Privacy has a price

the trade-off

- **Trade-off**: free app + aimed ads (gain) ⟷ being watched (cost) · **privacy** = a good people give up for something else
- **Externality** (Micro 10) = cost on people outside the deal → your contacts reveal your **friends**, who never chose
- **Privacy paradox** = say privacy matters, give data for small rewards · **Susan Athey**, Christian Catalini, Catherine Tucker (economists at US universities), **2017**: students gave friends’ emails for a **free pizza**
- **Default** (Behavioral 9) = the setting if you do nothing → most never change it
- Practice **store card** (Coral Mart): 5% off for a record of every purchase · `5% × $40 = $2`/week · `$2 × 52 = $104`/year → not free money: paid with data, worth ≥ $104 to the store

5 Real world

dated facts

- **Facebook** (Meta), Oct–Dec 2023: ≈ `$68` per user US + Canada · ≈ `$5.50` Asia-Pacific (≈ 12×) → advertisers pay more where people have more to spend (Meta results via Statista; no regional figure since 2024)
- **GDPR** (General Data Protection Regulation, EU = European Union) · since **25 May 2018** · limits collecting and using personal data · fines up to **4%** of yearly worldwide revenue
- **Apple** prompt “may this app track you?” · **April 2021** → Meta, Feb 2022: may cost ≈ **$10 bn** of 2022 revenue (its own estimate)
- **FTC** (US Federal Trade Commission, protects consumers) · July **2019** · Facebook pays **$5 bn** to settle (end the case) · it broke a 2012 privacy order
- Debate, no verdict: `FOR LIMITS` protect people who never read the terms of use, and friends who never chose · `AGAINST` aimed ads pay for free apps and small shops (Kai’s bakery)

6 So what?

question 4 of 10

- **Ten questions to ask about any app** · 1 · Who pays, if not you? · 2 · How many others are on it? · 3 · What does one more copy cost? · **4 · What does it know about you, and what is that worth?**
- Noa → trades attention + data for a free app (≈ $73 a year to Lagoon) · Kai → his bakery ads reach people who like bread, thanks to that data → Lesson 6 (market power)

Watch out: free ≠ costless (you pay in hours and data) · the app does not sell your data, it sells your attention dearer · data raises the price per hour, it does not make the app free by itself · a $68 vs $5.50 user = per user, not per hour