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RVU Insight: An Integrated Scheduling and Productivity Analysis Platform for an Academic Neuroradiology Section

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Briefly describe what attendees will see during your demo.
Attendees will see a live demonstration of the web app including productivity review, salary projection, and automatic future schedule generation.

Problem & Motivation: What clinical or operational problem does your MVP address?
The data needed to run an academic radiology department is typically scattered across multiple systems that do not communicate with one another. Productivity data resides in reporting platforms such as PowerScribe and mPower; compensation calculations exist in finance spreadsheets; and call / vacation schedules are maintained in various formats particular to each division such as shared Google Sheets. As a result, faculty may have little visibility into how a schedule is made, how their clinical work translates into compensation, and whether these processes are fair. Section leaders, meanwhile, must reconcile data manually and build schedules largely by hand. To increase both efficiency and transparency, we set out to create a single system in which all faculty could see the same numbers and use those numbers to inform decisions about scheduling, future hiring, and potential structural changes to division workflow.

What You Built: Describe your MVP, tool, or workflow in plain language
We built a containerized web application using React, Flask, and DuckDB for a 12-faculty neuroradiology section. The platform automatically imports mPower data each day and uses it to maintain a unified wRVU ledger. The application provides: - Productivity reports by attending and shift type over a user-defined date range. - Compensation modeling that allows leaders to assess compensation models and productivity thresholds. - A schedule generator built with OR-Tools CP-SAT. The solver accounts for individual shift eligibility, individual preferences, call and coverage requirements, and FTE-weighted monthly wRVU targets. Candidate schedules can then be reviewed and published to the section’s live schedule on a Google Sheet.

Tech Stack & Development Approach: What tools, frameworks, or methods did you use to build it?
The web app was vibe coded over the course of several months, primarily with Claude Code. It uses the mPower API to extract data for each case dictated in the radiology department. A python script de-identifies the data and adds it to a DuckDB database maintained securely on the hospital VPN. The frontend is built with Flask, React, and Javascript, allowing the user to examine data in various ways over different date ranges. The automatic schedule generator builds a list of rules based on staffing requirements, vacation requests, individual preferences, etc. and uses OR-Tools / CP-SAT to generate a viable schedule for a given future period. This can then be reviewed / edited in the web app and ultimately uploaded to the live Google Sheet the section actually uses for its schedule.

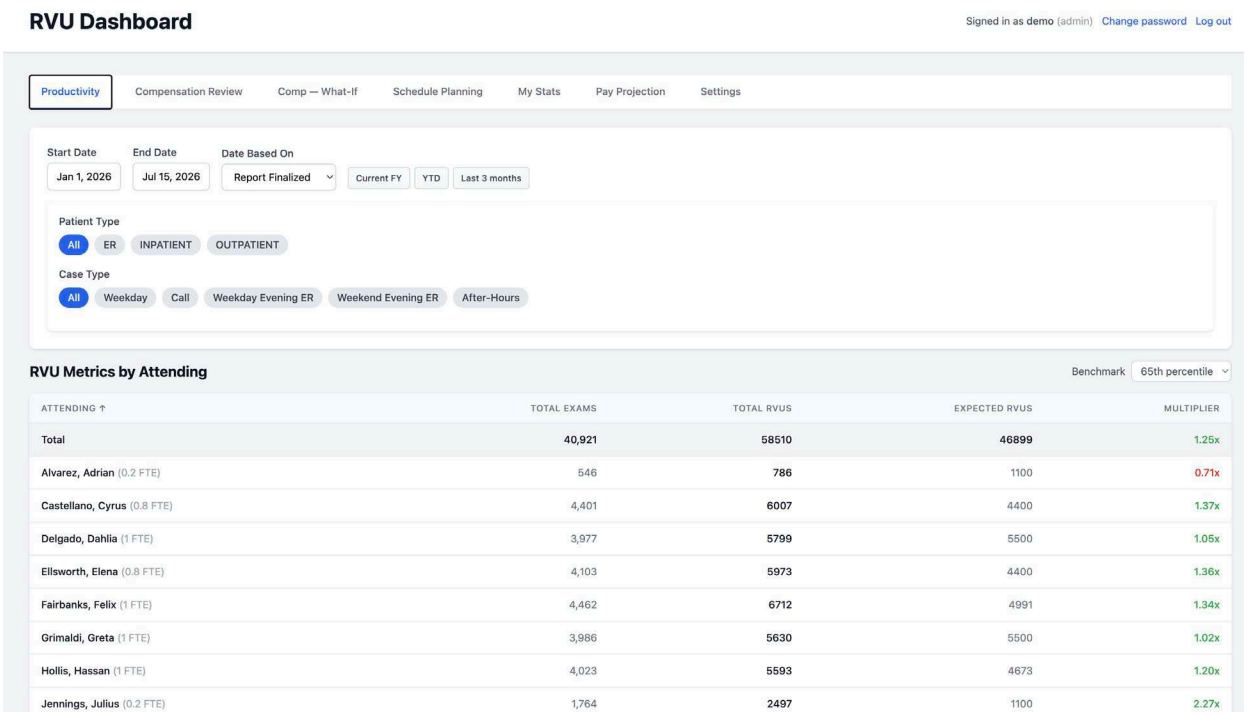
Validation & Evidence: Have you done any informal testing or validation? If so, what did you find?
Informal validation has focused on comparing the platform's outputs with the section's existing manual workflows. Productivity totals and after-hours calculations have been checked against source reports and spreadsheet calculations, while generated schedules are reviewed for coverage, shift eligibility, call assignments, and monthly workload targets. The application is now being used with real section data for compensation and scheduling analysis, which has also helped uncover discrepancies that were difficult to see when the data were maintained in separate systems. The scheduling component has required the most iteration. Early versions could produce mathematically valid schedules that were operationally awkward—for example, satisfying coverage rules while creating undesirable shift sequences or uneven assignments. Adding faculty-specific eligibility rules, workload constraints, and additional fairness criteria improved the results, but also made clear that some scheduling preferences are difficult to formalize and remain best handled through human review and post-hoc schedule editing. We therefore treat the solver's output as a draft schedule (though usually few edits are required).

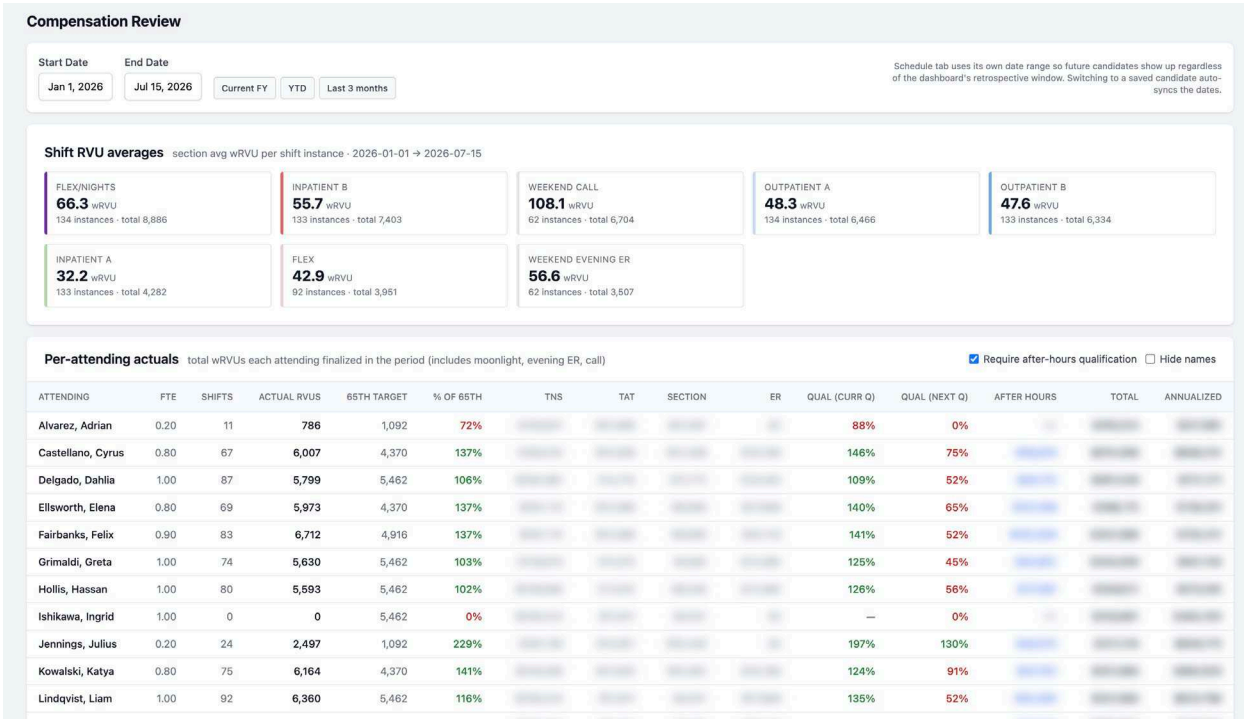
Feedback You're Seeking: What specific feedback, help, or collaboration are you hoping to get from the CAIMI26 community?
We would love to get feedback on whether / to what extent such a tool would be useful to other radiology departments, and on additional features we could implement that people would find useful. At our institution, the next step for our dashboard is to deploy it to the rest of the department (not just the neuroradiology section) -- there are a number of challenges here, such as reconciling all the different schedules, shift types, etc. We would love feedback on how others have dealt with such problems and what issues they might foresee as we try to bring the dashboard to other radiology settings.

Known Limitations & Honest Failures: What isn't working yet, or what have you already tried that failed?
The main limitation is that the platform depends on exported PowerScribe and mPower files rather than direct, supported integrations. Changes in report structure, field names, or local configuration would break the ingestion pipeline or require new mappings. A reliable real-time interface would likely require vendor-supported APIs or database access that are not easily available to us. The same is true on the scheduling side: the application publishes to a shared sheet, but it is not integrated with an enterprise scheduling platform, credentialing system, or payroll system. For example, it seems that publishing the schedule to Qgenda (what the hospital uses) would require additional API access / vendor features that we don't currently have.

Potential for Impact: If this MVP were fully developed and deployed, who would benefit and how?
In short, the system delivers transparency for radiologists and increased efficiency for administrators. Anecdotally, radiologists in the section love having direct access to their productivity and compensation data and knowing that the schedule is made impartially according to defined rules. Section leaders gain a reproducible way to model compensation, identify coverage gaps, and generate schedules that account for workload, eligibility, and fairness rather than relying on manual spreadsheets and institutional memory. Finance and administrative teams spend less time reconciling conflicting reports, while departments can use the same data to support workforce planning, recruitment, and more transparent compensation policies. The downstream benefit to patients and trainees would be indirect but meaningful. More reliable staffing and fairer distribution of call could reduce burnout, improve continuity of coverage, and make it easier to match subspecialty expertise to clinical demand. Trainees could benefit from more stable faculty availability and fewer last-minute coverage changes. At the health-system level, a fully developed platform could provide a

common operational view across productivity, staffing, and compensation, helping departments make decisions that are both financially defensible and clinically sustainable.





DATE	DAY	CALL	ALVAREZ FTE 0.20	CASTELLANO FTE 0.80	DELGADO FTE 1.00	ELLSWORTH FTE 0.80	FAIRBANKS FTE 0.90	GRIMALDI FTE 1.00	HOLLIS FTE 1.00	ISHIKAWA FTE 1.00	JENNINGS FTE 0.20	KOWALSKI FTE 0.80	LINDQVIST FTE 1.00	MONTGOMERY FTE 1.00
07-05	Sun	Kowalski	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend
07-06	Mon		Flex*	Flex*	Academic	Inpatient A	Flex/Nights	Vacation	Outpatient B		Academic	Academic	Outpatient A	Inpatient B
07-07	Tue		Academic	Inpatient B	Inpatient A	Academic	Outpatient A	Vacation	Flex/Nights		Academic	Outpatient B	Academic	Flex
07-08	Wed		Academic	Inpatient A	Flex/Nights	Academic	Vacation	Vacation	Outpatient A		Academic	Inpatient B	Outpatient B	Flex
07-09	Thu		Academic	Inpatient B	Outpatient B	Vacation	Vacation	Vacation	Academic		Flex	Flex/Nights	Outpatient A	Inpatient A
07-10	Fri		Academic	Outpatient B	Inpatient B	Vacation	Vacation	Vacation	Inpatient A		Academic	Flex	Outpatient A	Flex/Nights
07-11	Sat	Jennings	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend
07-12	Sun	Jennings	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend
07-13	Mon		Flex*	Flex/Nights	Flex*	Vacation	Academic	Outpatient B	Academic		Academic	Inpatient A	Inpatient B	Outpatient A
07-14	Tue		Academic	Outpatient B	Academic	Vacation	Outpatient A	Inpatient B	Inpatient A		Academic	Flex	Academic	Flex/Nights
07-15	Wed		Academic	Academic	Outpatient B	Flex	Vacation	Inpatient A	Flex/Nights		Academic	Inpatient B	Outpatient A	Academic
07-16	Thu		Academic	Flex	Inpatient A	Outpatient B	Outpatient A	Academic	Academic		Academic	Academic	Flex/Nights	Inpatient B
07-17	Fri		Academic	Academic	Outpatient A	Inpatient B	Inpatient A	Flex/Nights	Vacation		Flex	Academic	Vacation	Outpatient B
07-18	Sat	Montgomery	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend
07-19	Sun	Montgomery	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend
07-20	Mon		Flex*	Academic	Outpatient A	Flex*	Inpatient A	Flex/Nights	Vacation		Academic	Outpatient B	Inpatient B	Academic
07-21	Tue		Academic	Inpatient B	Outpatient B	Inpatient A	Flex/Nights	Outpatient A	Vacation		Academic	Academic	Academic	Flex
07-22	Wed		Academic	Flex/Nights	Academic	Inpatient B	Outpatient B	Inpatient A	Vacation		Academic	Flex	Vacation	Outpatient A
07-23	Thu		Academic	Academic	Inpatient B	Flex	Vacation	Outpatient B	Academic		Academic	Flex/Nights	Outpatient A	Inpatient A
07-24	Fri		Academic	Flex	Inpatient A	Inpatient B	Academic	Academic	Flex/Nights		Outpatient A	Academic	Outpatient B	Academic
07-25	Sat	Castellano	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend
07-26	Sun	Castellano	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend	Weekend
07-27	Mon		Flex*	Academic	Vacation	Inpatient A	Flex*	Inpatient B	Flex/Nights		Academic	Academic	Outpatient A	Outpatient B
07-28	Tue		Academic	Inpatient B	Vacation	Outpatient B	Flex/Nights	Inpatient A	Outpatient A		Academic	Flex	Academic	Academic

GitHub Repo:

- https://159-89-151-94.sslip.io/
login: demo
password: caimi2026
- https://github.com/soonestmended/rvu-dashboard-demo